PREMIER ISSUE!

U.S. BOAT & SHIP MODELER

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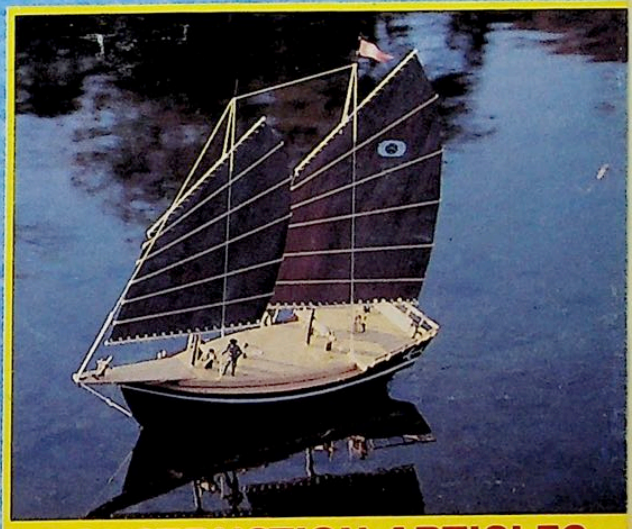
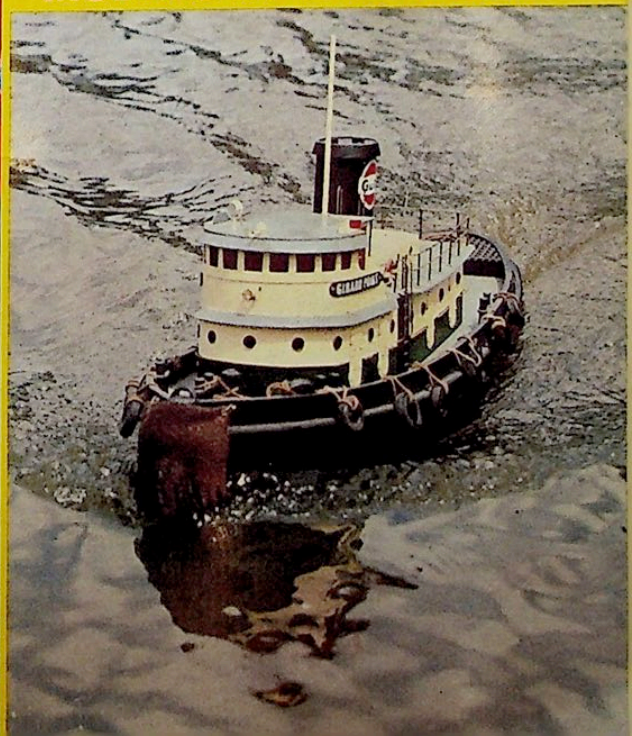
SUMMER 1987

- MODEL SHIPWRIGHT
- STRICTLY SAIL
- RADIO WAVES
- POWER BOAT RACING
- WATERLINES & CURRENTS
- INDUSTRY SCUTTLEBUTT
- FRANK ADVICE FOR BEGINNERS



CONSTRUCTION ARTICLES FOR ALL OF THESE MODELS IN THIS ISSUE!



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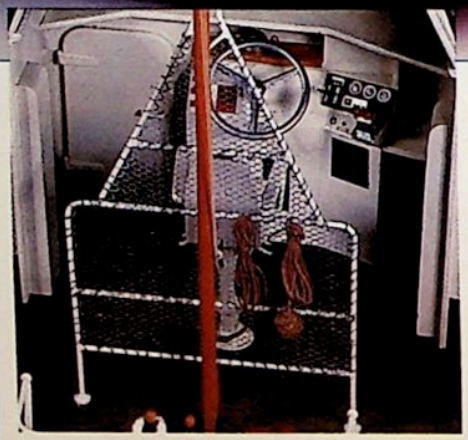

BUILD IT FOR SHOW...OR FOR R/C GO

Soon it's ready for the mantle. But this one was made to be radio controlled if you like. So we've included the workable twin rudders and counter rotating propellers so you can go on patrol at your local pond or lake. (Electric motors, speed control and R/C system not included.)

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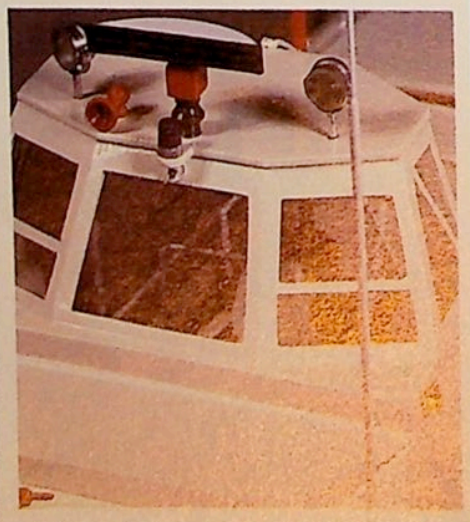

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P	POT LIFE	9 MIN.
H	HANDLING TIME	1½ HR.
F	FULL CURE	6 HR.

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PIC "COATING POXY" COVERAGE:

Squeegee application over 6 ounce glass cloth, applied over white styrofoam.

1 fluid ounce (30 Ml.) of mixed (25 Ml. Resin & 5 Ml. Hardener) "Coating Poxy" will cover:

First Coat = 150 square inches/fluid ounce.
Second Coat = 350 sq. inches/fluid ounce.
Third Coat = 675 sq. inches/fl. oz.
Estimating Example: For a 900 sq. in. project, first coat using 6 oz. cloth, requires approximately 6 fluid oz. Second coat requires approximately 2.6 fluid ounces. Total = 8.60 fl. oz. PIC "Coating Poxy".

BURNISHING:

PIC "Coating Poxy" can be burnished to remove fingerprints, marks, trapped air bubbles, etc., *before* fully cured. These minor imperfections can be literally erased.

To Burnish: Cover finger or squeegee edge with layer of polyethylene plastic film, rub or smooth over "Coating Poxy" surface to burnish away imperfection.

Burnishing best performed just as the "coating" layer is becoming 'tack-free'. Normally, in about 90 minutes after application. As the layer cures, less burnishing is possible.

Proper burnishing can greatly reduce sanding requirements and produce better overall results.

SCAVENGING EXOTHERM APPLICATION:

First application coat of PIC "Coating Poxy" serves to wet and saturate glass cloth, bonding it to the foam or wood surface.

The second and subsequent coats provide the base for finishing and painting/covering.

Assuming you have applied your first coat uniformly and do not major surface defects to remove (bunched cloth, heavy wrinkles, etc.), you can make a second "Coating Poxy" application layer over the first layer *before* the first layer is fully cured. The result is the scavenging of the exotherm (heat generated during cure) of the second layer to set and cure *both* application coats.

To Scavenge: Apply second coat within 90-120 minutes over first coating layer. Both coats will be accelerated in curing and be tack-free in approximately 90 minutes, fully cured in 4-6 hours.

SANDING:

PIC recommends the use of 80-120 grit aluminium oxide sanding paper for "first pass" sanding.

PIC "Coating Poxy" is fully waterproof and wet sanding is recommended to generate final finishes.

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U.S. BOAT & SHIP MODELER

SUMMER 1987

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COVER: All three model boats that appear on the cover of this, the premier issue, are also featured as construction articles. Jerry Dunlap's daughter, Denise, age 13, holds the D.F. Sport 40 Unlimited, designed by Dave Frank, under Jerry's watchful and experienced eye. The cute little R/C Chinese junk comes from England by way of designer Graham Goodchild, and the Harbor Tug is built up of hobby shop plywood and balsa, as cleverly designed by Francis Smith.

STAFF

EDITOR/PUBLISHER
Wm. C. Northrop, Jr.

VICE PRESIDENT
GENERAL MANAGER
Anita Northrop

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MANAGING EDITOR
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CONTRIBUTING EDITORS

ROD CARR
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ELOY MAREZ
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RALPH WARNER

ADVERTISING
REPRESENTATIVES

Bill Northrop
Home Office, Newport Beach

Al Novotnik
4 Beverly Pl., Norwalk, CT 06850
Bus. Phone (203) 847-7478

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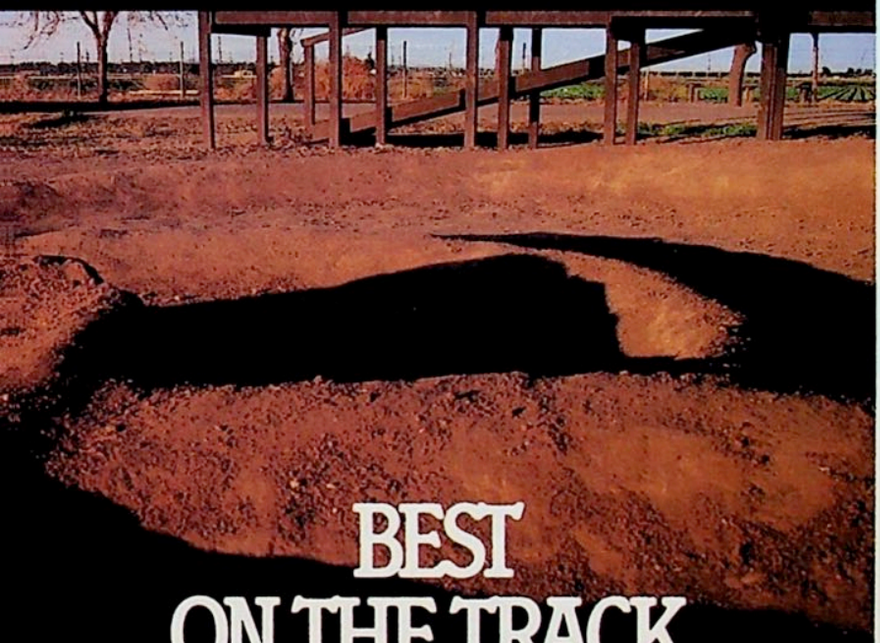

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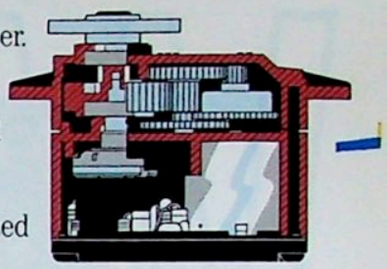

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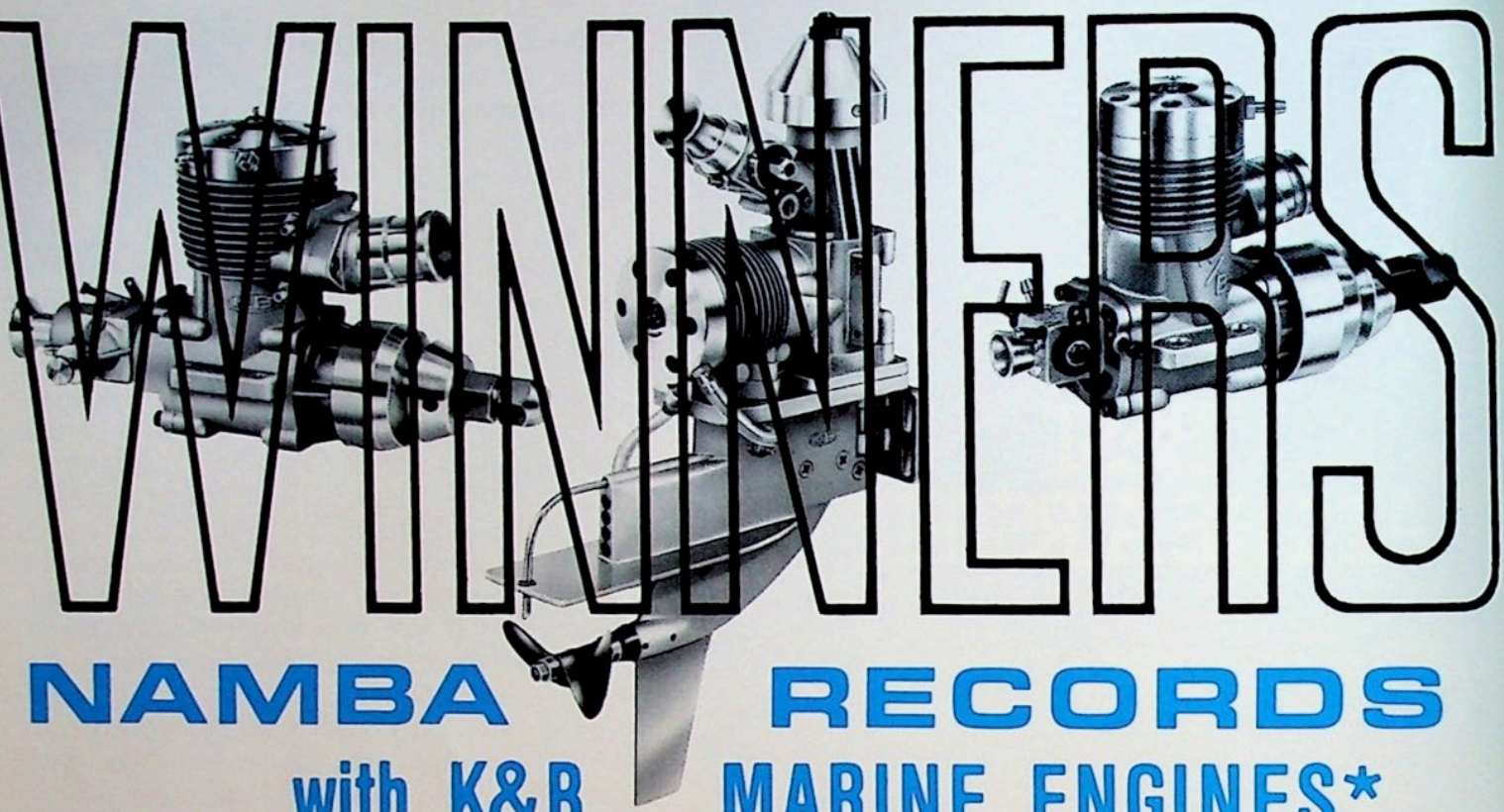

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MONO	CM	ED FISHER	K&B .67
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OFFSHORE	AOS	JERRY DUNLAP	K&B .21
OFFSHORE	BOS	JAMES BURBA	K&B .45
SPORT .40	S40-1	JIM AUGUSTON	K&B .40

OUTBOARDS – 9 out of 9

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OUTBOARD HYDRO	BOBH	JACK OXLEY	K&B .45
OUTBOARD HYDRO	COBH	JIM AUGUSTON	K&B .67
OUTBOARD MONO	AOBM	DON DONIKOWSKI	K&B .21
OUTBOARD MONO	BOBM	NORMAN TEAGUE	K&B .45
OUTBOARD MONO	COBM	JERRY DUNLAP	K&B .67
OUTBOARD OPC TUNNEL	BOBT	JIM AUGUSTON	K&B .45
OUTBOARD OPC TUNNEL	COBT	ED FISHER	K&B .67
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*Oval Records as of January 1st, 1987.

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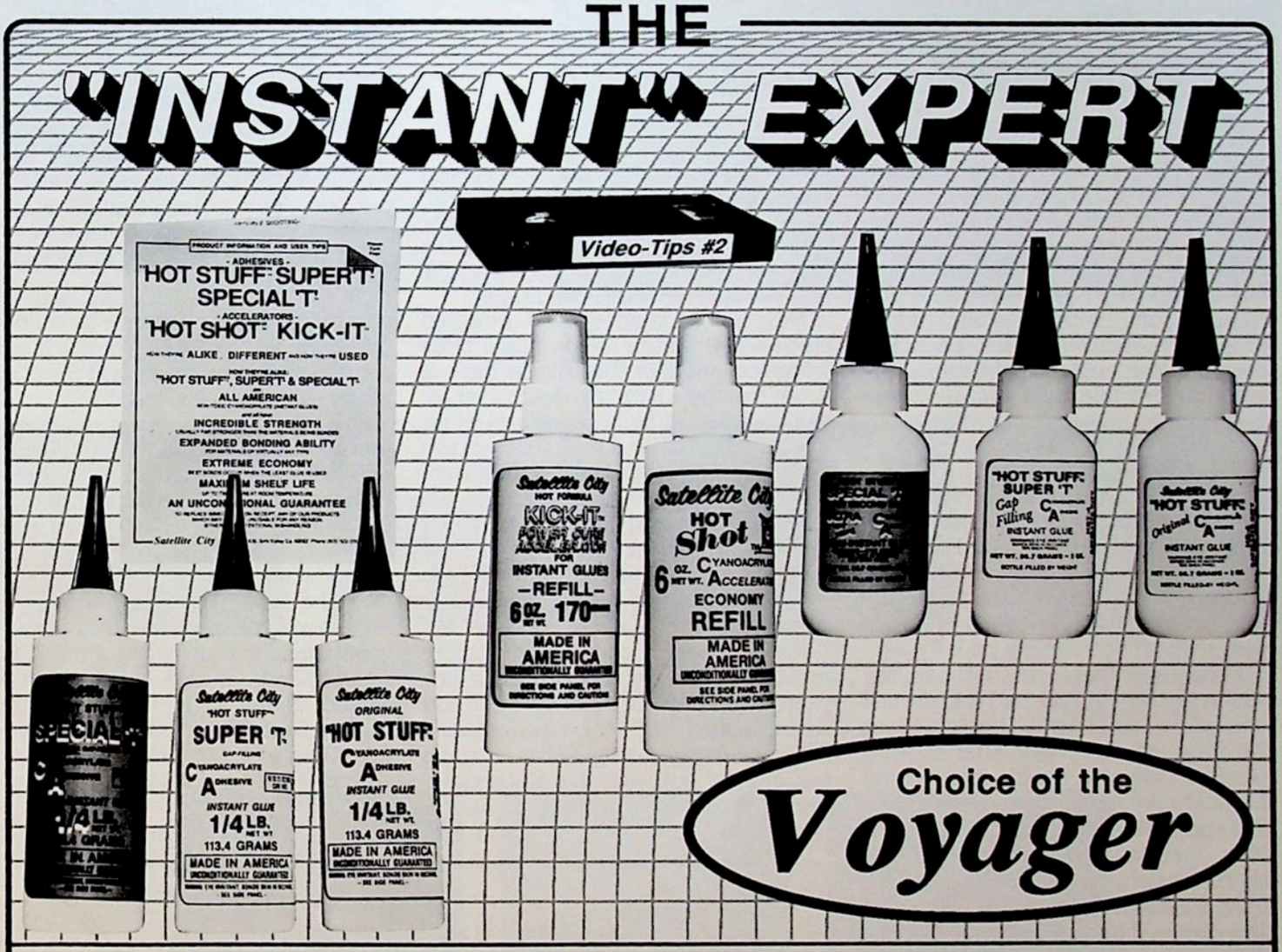

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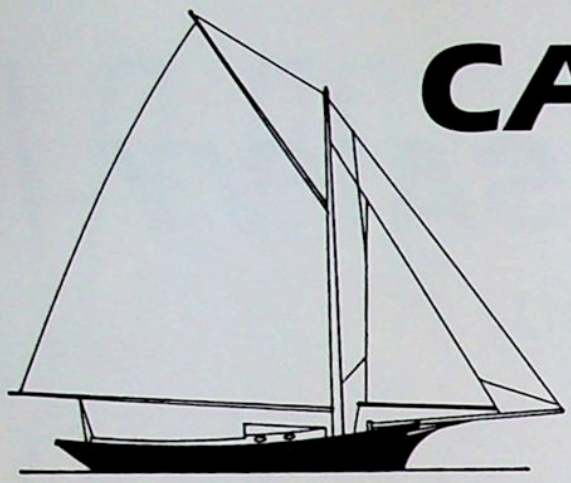
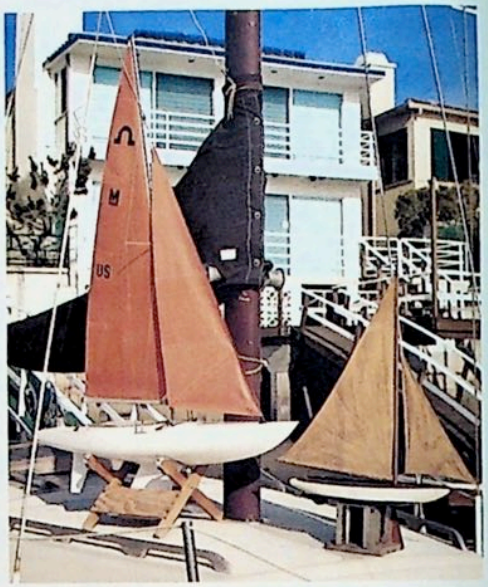


CAP'N'S LOG

By BILL NORTHROP . . .



The editor's 56-year old sailboat and 12-year old Soling R/C sailing yacht on board the 32-foot Islander-hulled sloop. Sails and paint on the little boat are original. More info in text.

I still have the first model boat I ever owned. It's a sloop-rig sailboat, scratch-built by my grandfather over 55 years ago, is 22 inches long, not including the bowsprit, with a seven-inch beam. The little boat (it seemed huge when I was only eight years old) is well balanced, and with sails and rudder properly preset, would sail a straight course fast enough to outdistance my grandfather while pulling for all he was worth on the oars of our pursuing rowboat, with me tearfully urging him to go faster. Fortunately, it wasn't a long distance across the Fore River, near Weymouth, Massachusetts, where I was born, and where my grandfather lived. We always managed to retrieve the boat when it ran aground on the far shoreline, and while at it, I learned to handle oars without "catching a crab."

I was never aboard any of the sailing yachts he owned . . . he had sold the last one before I was born . . . but whenever we returned for a visit after moving south to Delaware, my grandfather and I would take walks down to the river and spend time with some of his friends who operated boat yards along the shore. I watched wood ribs being pulled from the steam box and then being bent and clamped in place, marveled at the skilled shaping of mahogany strip planking, was allowed to whack away at a few of the hundreds of wood plugs that covered countersunk screws, wallowed in rich smelling wood shavings . . . man, what nostalgia!

Grandfather's father invented the railroad ticket punch, and there was a separate building in the back yard of his home where he continued the manufacturing of punches (each one was hand-finished; I still have about seven or eight originals) until the late 1920's. It was in this shop, with its huge overhead driveshafts and pulley wheels, turning long endless leather belts which supplied power to the lathes, drill presses, and other fascinating machinery, that grandfather built my big little boat. I can still remember turning out all kinds of weird shapes on the foot-pedal operated wood lathe, and gazing at the original Titanic calender hanging on the wall in the small office. Incidentally, the green and white paint on the sailboat is still in relatively good condition!

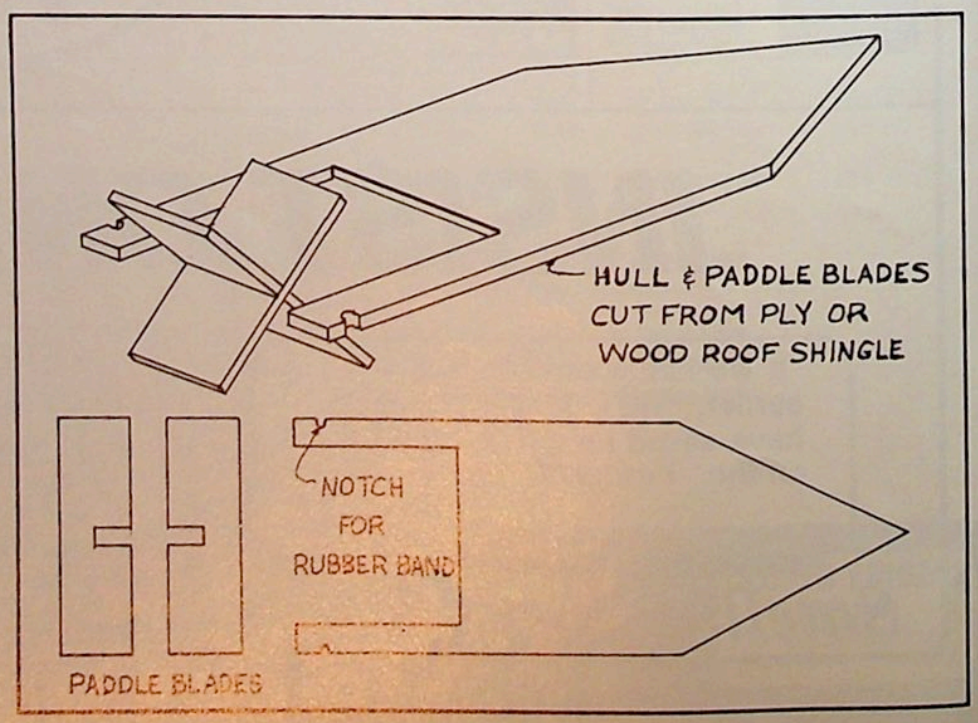
Next came rubber band powered stern-wheel paddle boats made from wood roof shingles. Just for the heck of it, we'll include a rough sketch to show you how they're built. Great project for a budding modeler who is ready to use a jigsaw. . . no other tools are required.

Model airplanes took over and occupied all of our spare time modeling interest until about 1956-57, when we built a scale ship model from plans in the now defunct *Air Trails/Young Men/American Modeler.* It was the "Bunker Boat," a commercial fishing trawler, which we republished a few years ago in *MODEL BUILDER* and will redo for *USBSM* in a future issue. Using a relay type single-channel radio and a crazy but workable Rube Goldberg device that we cooked up, it was possible to have trimmable left and right rudder; slow forward, fast forward, stop, and slow reverse motor control; horn; and navigation lights. It took some fancy button-pushing at the transmitter, but it worked reliably!

Our model boat fleet now includes a four-foot long electric powered harbor patrol/fire boat, a K&B 40 powered Futuraglass deep-vee, Santa Barbara and Soling sailing yachts, plus a Hartman tugboat and Robbe "Atlantis" under construction.

In the late 60's, before moving to Southern California, we crewed for a good friend and owner of a beautiful, wood-hulled, 37-foot cutter, built in Maine about 1936. This included cruises from New York harbor, down the Atlantic coast to Cape May, the Delaware/Chesapeake canal,

Continued on page 78



Craftsman's ship.

Superbly engineered, challenging to build and operate, every Robbe scale boat is a finely detailed reproduction of a classic craft. But it's the extra touches that really add to the quality. With a full range of impressive features—cranes, water cannons, lights, revolving antennas, anchor winches and special effects like diesel sounds, horns and sirens—Robbe sets new standards for scale appearance. *See your favorite R/C dealer for these exciting kits.*

Happy Hunter - A true scale model of a Dutch ocean-going salvage tug. Twin Kort nozzles and a powerful bow thruster enable this model to perform the most difficult maneuvers. Customize your model with the many working accessories available. Length: 40.75"; Beam: 9.25"; Scale: 1:50. *Happy Hunter No. 1106. Fittings Set No. 1107.*

Rembertiturm - An incredibly detailed oil drilling platform supply vessel. With optional fittings you can operate the crane, bow thruster, radar antenna, lights, winches and anchors. Length: 47.5"; Beam: 9.5"; Scale: 1:50. *Rembertiturm No. 1077. Fittings Set No. 1078.*

Antje - Relive firsthand the rugged lifestyle of the North Sea fishermen with this sturdy fishing cutter. Foldable masts, easy to assemble. Length: 25.20"; Beam: 8.27"; Scale: 1:20. *Antje No. 1110. Fittings Set. No. 1111.*

Acapulco - This high speed motor yacht features life-like flying bridge and exotic wood deck planking. Fittings set includes anchor, flag, steering wheel, functional mast search light and more. Length: 29.5"; Beam: 9"; Scale: 1:15. *Acapulco No. 1040. Fittings Set No. 1041.*

Neptun - This exact-scale harbor tug is fitted with an injection-molded Kort nozzle. Kit includes all parts required for operation. Length: 22.44"; Beam: 6.9"; Scale: 1:50. *Neptun No. 1030. Fittings Set No. 1031.*

Norderney - A unique flat-bottom survey ship used in North Sea coastal waters. Fully operational crane lets you launch and retrieve the sounding vessel. Features twin rudders and a twin-screw propulsion system. Length: 49.2"; Beam: 11.4"; Scale: 1:25. *Norderney No. 1035. Fittings Set No. 1036.*

Schütze - A sleek, swift, handsome minesweeper. Navy geared motors and triple rudders are easy to install and provide the high speed and maneuverability of the full-size craft. Optional Fittings Set No. 1092 contains over 240 separate pieces. Length: 47.25"; Beam: 7.7"; Scale: 1:40. *Schütze No. 1091.*

Düsseldorf - High speed fire fighting boat with functional water cannons. Accessory functions include rotating boat crane, operating winch, radar, searchlight, lights and diesel sound generator, and more. Length: 45.67"; Beam: 9.84"; Scale: 1:25. *Düsseldorf No. 1100. Fittings Set No. 1101.*

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H.M.S. Victory, of 1805. A 13-foot R/C model under full sail, built and photographed by Victor Yancovitch, Vancouver, B.C., Canada.

The MODEL SHIPWRIGHT

By MILT ROTH . . . Wooden ship model construction is the author's specialty. Whether you build for show or for go . . or combine the two, the information forthcoming will keep you from running aground on your future construction projects.

There has been and will continue to be a massive outpouring of information concerning all forms of ship model building. The majority of this information stems from the builders of ship and boat models on the pages of periodicals such as this. These writers are not always the experts we believed them to be. As our experience increases we begin to see the several errors in their methods. Some have led us down the primrose path. It behooves every modeler to have a firm education in modeling and to constantly be engaged in the continuation of their building experiences.

Some of the information that is offered to model builders is provided by those engaged in sales promotion. They are the representatives of the manufacturers, importers, and/or distributors of boat model kits. Many are writers for advertising agencies who know little of boat building techniques. The outpouring of their rhetoric is designed to sell the product and not discuss the potential problems of construction. I feel that the builder who does not have an understanding of terminology will be the loser. It is not always the ease and speed of construction nor the price that makes a successful model. The simplicity of such construction may result in a poor model or an unwanted sinking.

This writing, we trust, might contain some information you need to know. Perhaps it might assist you in making an informed decision.

TYPES OF HULLS

Basically the shapes of hulls are divided into two classes. These are the *hard chine* and the *soft chine*. The hard chine is a sharp coming together of the sides and bottom. This is the shape and design of the flat-bottomed dory, rowboat, skiff speedboats, and P.T. hulls.

The soft chine is a smoother coming together of the two components to form the shape. This is the round bilge of ships designed for maximum cargo space. Soft chine gives the greatest capacity for cargo and allows the best unrestricted movement through the water. The shape and chine of the hull is an important factor in the performance of any vessel.

Perhaps this is a proper time to introduce basic terminology in reference to the shape of a hull. The ability to read a ship's plan (draught) is essential to understanding how to build a hull.

While a knowledge of drafting instruments and drafti?g principals is helpful, it is not mandatory. The ability to read a scale, use a ruler, work with a pair of dividers, and have some knowledge of changing from one scale to another is about all that is necessary. With even a limited approach, such as this, one could build a model from just a set of lines and a photograph, sketch, painting, or description. Many have.

Ship's plans or draughts are renditions of a three-dimensional object on a flat plane. Over the years, more by tradition than by dictation, a language has evolved. It is not difficult to understand. Each of the views has a specific name. The lines are identified by the same letters or numbers in all views. There is an order to the presentation of these pictures. Since the ship is the same on either side of the centerline, only half of a view is sometimes shown.

For purposes of illustration, let us assume that the hull is a solid object. It is now sliced in both vertical and horizontal planes. Each slice is identified by a letter or number. Each view can then be shown in a logical order. By referring to the same number in each view, the shape of the hull can be determined. This is the ship's draught in its simplest form. If you understand this presentation, you can read a plan.

Quite understandably, the side view is called the *profile*. It is also referred to as the *sheer plan*. The sheer is the curve of the ship taken in a front to rear context. In other words, it is the slope of the deck. Most, if not all, ships and boats are higher at the bow and stern than they are in the (amidships) middle. This is the side curve (sheer) of the vessel. Vertical slices, which run parallel to the keel, are referred to as *buttock lines*. Why this term is anybody's guess. No further comment on the choice of the term.

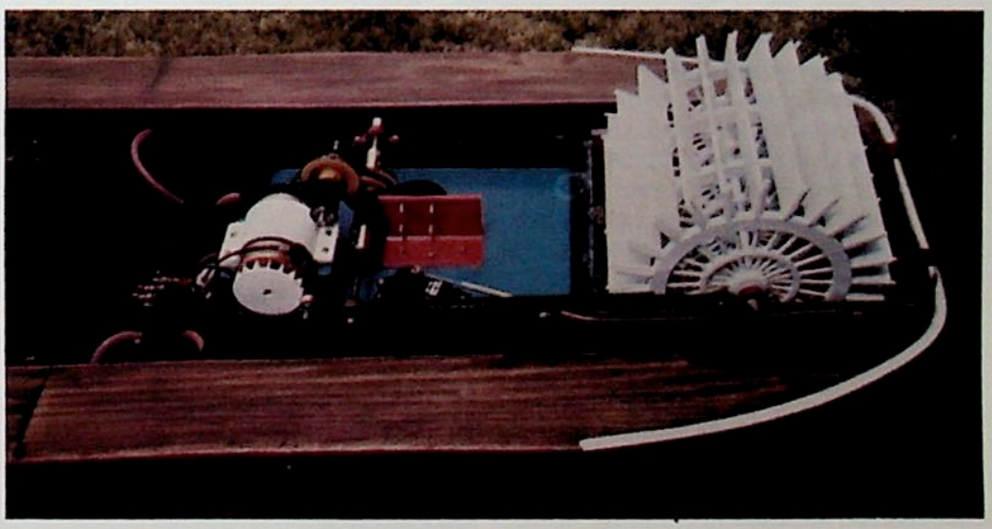
Looking at the plan of the ship from the top, you may see only one half of the ship. Obviously the hull is, and should be, the same on both sides of the centerline. Duplication of information is not mandatory to understanding the shape.

The lines that are indicated on the top view plans are termed *waterlines*. It would be as if the hull were lowered into the water and stops were made at certain predetermined intervals. A line would be drawn to indicate the shape of the hull at that point. Some plans will show, either just one half of the hull with the lines indicated, or a general outline. The other half of the plan should indicate the deck layout. This is the *half-breadth plan*. Plans that are drawn to assist the modeler in constructing from a kit may not, if it be the manufacturer's wish, show the waterlines. Information may consist of a view of the deck and its layout only.

The most confusing view is the end view. This is known as the *body plan*. The indication of the slices across the hull at right angles to the keel are called *station lines*. This does not necessarily mean that there is a structure of some type at this line. By coincidence, there may be. These lines often seem like a jumble. They show the shape of the hull in cross section. Remembering that the ship is the same on both sides of the centerline, the draftsman only indicates one half of the lines across ending at the center line. A sort of a half of a slice, as it were.

The thing to remember is which direction you are facing when you are viewing the lines of the body plan. Let us assume that you are standing inside the ship. Your position is at the center frame. You are standing amidships and

"Chaperon" sternwheeler, built by Bob Gregory from Model Shipway drawings. Hull is built up, planked, then coated with fiberglass resin. Casset plays Dixieland music. Diesel horn.



Paddle wheel is driven through belt reduction by Astro Flight 40 motor, powered by two Eagle Pitcher 6-volt, 8 amp batteries, with a Vantec solid state speed control.

Tugboat also built by Bob Gregory. Hull of 50-inch tug is planked, then resined. Power is same units as in Chaperon. Has fire hose nozzle, and 16 running lights.

facing the bow. The lines you see drawn on the right-hand side of the centerline are the station (section) lines toward and ending with the bow. If you turn around and face the stern, the lines represent the cross station lines towards the stern. They appear on the left-hand side of the centerline in the drawing. Simple.

Not to add to the confusion, but some plans will have a grid (squares) drawn over the body plan. This may be the only view that has this feature. Obviously they are there for a reason. There is a method for enlarging and reducing scales through the use of a grid. Should the same curve of line as it passes through that square be drawn in the same identified square that is proportionally larger, the scale is enlarged. Do the same thing using a square that is smaller than the body plan, and the scale is reduced. The relative size of the squares is the factor that determines the scale.

You may wish to transfer the section line as is without scale change. Transfer them to the wood, and they become the pattern for your frames. You are *lifting and lofting*. The grid is redrawn the same size. If there is no grid and you wish to change scales, you can draw one. I suggest that you lay some tracing paper over your original plan. Unless, of course, you don't care to keep the plan when your finished with your model. The method of transferring the outlines of the frames from plan to wood is not difficult.

SOLID HULL BUILDING

The hull may be carved out of one piece of any selected material. A solid block (wood, styrene, styrofoam; whatever) is prepared with reference lines, and the shape of the hull is slowly carved. This method is the method that is used in making a "plug" for a fiberglass hull. The shape is slowly carved to fit outside templates. Carving a solid hull is an experience that should be felt at least once in a modeler's life.

Solid hulls that have been preshaped by machine can be secured. This type hull is furnished with kits. Several kit manufacturers will sell the preshaped hulls.

While we are on the subject of solid hulls, wood or any material of choice; a short course in working this hull.

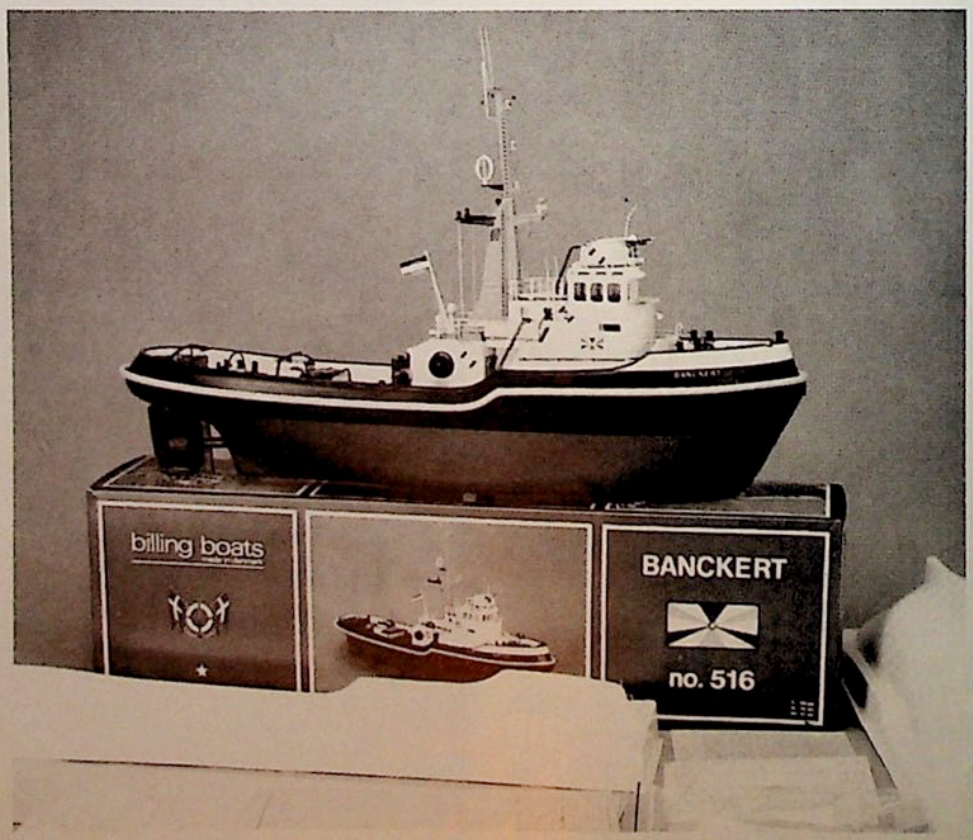
Study the blueprint (draught) carefully, and note the position of the section lines. Indicate a centerline. Draw the location of the section lines on the material to be carved. Cut templates from cardboard, posterboard or Bristol Board to the shape of the section lines as traced from the plans. Shape the hull to the templates at their positions on the material. Prepare and shape the surface. Remove material slowly to assure proper shaping.

Scratch-built tug "AJAX." Radio controlled, wooden-hulled model built and photographed by Carle Rayburne.

Excellent source of reading and instruction for all types of solid hull building, kit or otherwise, is a publication, *The Neophyte Shipmodeller's Jackstay*, by George F. Campbell, M.R.I.N.A. (Model Shipways, Bogata, NJ). A fuller understanding of the method involved can be gained by reading *How to Make Block Ship Models*, by Charles G. Davis (Edward Sweetman Company, NY).

The most popular means of construction of a solid hull built to a plan and without a kit is the *laminated* method rather than the solid block. This method saves on the amount of material needed. This is called "bread and butter" building. It is also much simpler to secure the material as precut boards of wood. The carving time is greatly reduced. Wood may be laminated (glued) in a vertical or horizontal manner.

Carving out or hollowing the inside is not a matter of choice. Solid blocks of wood tend to check. They split along the grain. Hollowing out not only allows the wood to breathe but also, as in static models, can prolong the life expectancy of the model. Solid hulls should therefore be avoided if at all possible in larger scales. Hollowing out also allows a design in construction to accommodate the special equipment and gear for either the radio control or illuminated versions. Experienced builders recom-

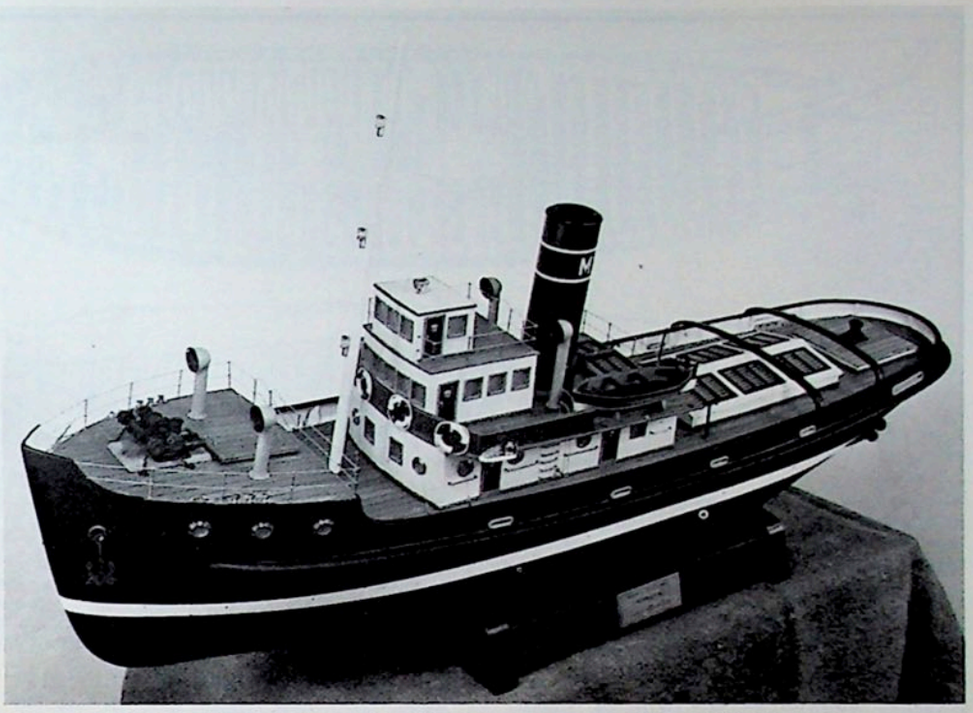


Billing Boats plastic models are specially made for R/C. Construction is a combination of ABS plastic and wood. Available in the U.S. through Altech Marketing and local hobby shops.

mend that you carve the hull to an even thickness along the sides except at the attachment of the keel. The thickness needed at the keel is important in models, such as, racing sailboats. Weights are needed at the keel to insure good sailing characteristics. Soft chine versions can be ballasted. The keel, and weighted false keel on sailing versions, is added for stability and sailing characteristics in period sailing vessels.

Planking over a solid hull is good training for the builder who wishes to gain control and experience in handling wood planking strips. It also adds to the effect of the painted ship model. With a solid backing, the shaping and fitting of the planks can be the concentrated effort. Planking is affixed to the solid and shaped hull.

Planking over a solid hull will require extra material to be removed to allow for the thickness of the planks to keep the model in scale and true to the lines of the hull. When building from plans, be sure to check if the lines are measured to the inside or outside of the planking. A good plan will indicate the measurement.



The tug "MUIMOTA," built from a Corel kit. Photo courtesy of Corel Models, Italy.

THE BUILT-UP METHOD

The "built-up" method is construction of the hull's shape by the addition of material. The built-up hull is like getting back to ship construction. Some refer to this as the "hollow hull." This terminology has become rather old-fashioned. So too, as I believe, has the term "solid hull."

The built-up methods should be correctly identified. Let's set the record straight. A *plank-on-frame* (P-O-F) construction is a scaled version of the way the original ship was built. Construction is similar to the way the ship itself is constructed except in a scaled miniature. Each frame is built of all its component pieces and then attached to the keel. The keel is also built up much like the real ship. The stem and stern (deadwood) areas are built like the original life-sized vessel. Several aspects may not be actually as the real ship was built, but it is as close a scale model of the original as the modeler desires. You can compare yourself to being a (model) shipwright working in miniature. Serious modelers want their models to look like the real thing.

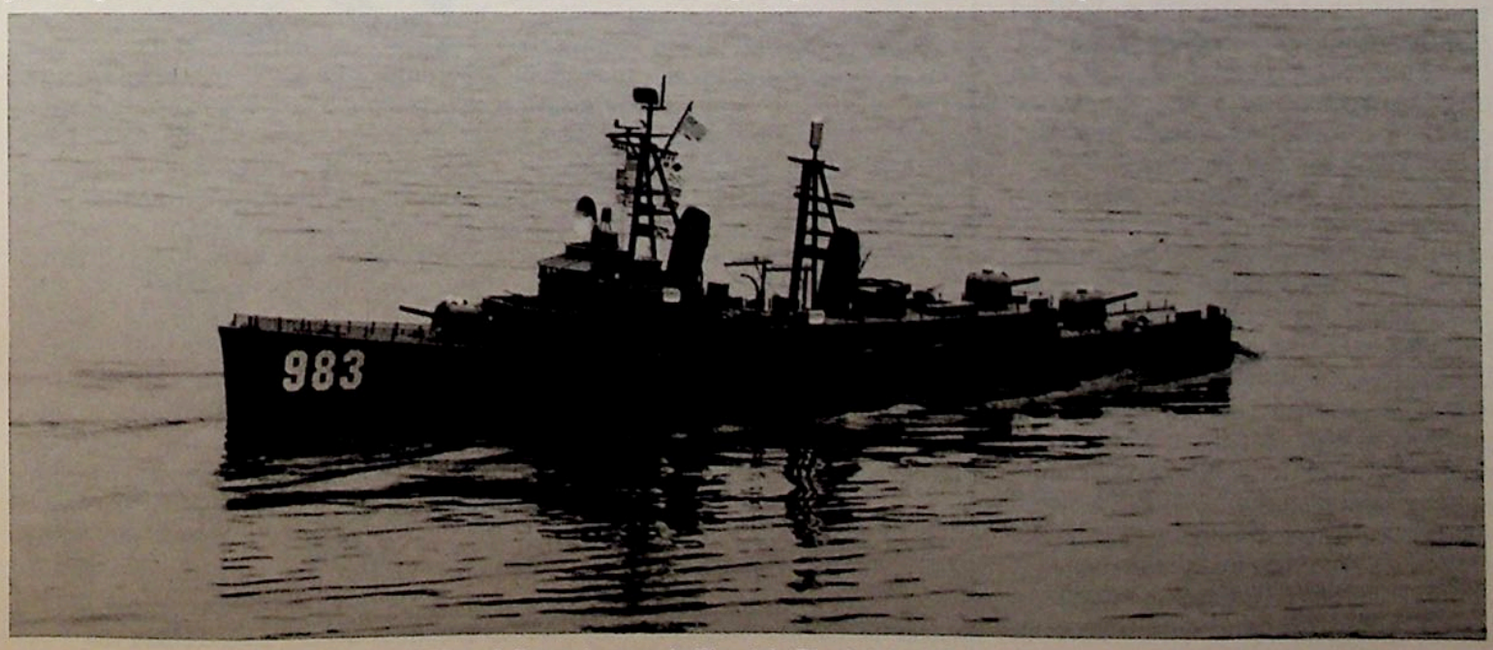
The exacting work and the preplanning of building a plank-on-frame ship model will not be detailed at this time.

The makers of kits to build ship models have perverted the term "plank-on-frame." In reality they should tell it like it is. . . *plank-on-bulkhead*. This version of the built-up ship model is not built with (constructed) frames. The "frames" are plywood bulkheads.

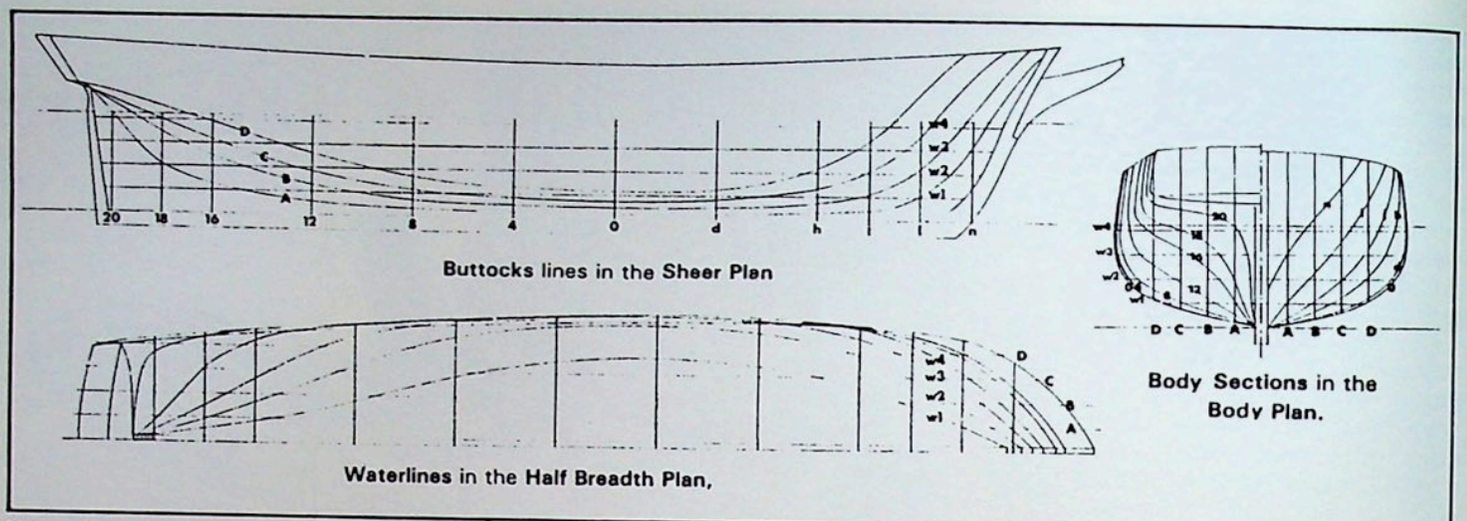
Redoing the original design and/or building methods of the manufacturer is *customizing*. Some individuals call this "kit bashing." It can be said the act of customizing begins when a modeler changes something in the building, adds parts that did not come with the kit, or replaces out-of-scale parts. In other words, if anything is changed that didn't come in the box, it is, or can be called, customizing. A "splitting hairs" definition.

Radio control enthusiasts can select, build a hull, or buy a complete kit to construct a ship model.

The type of material used to build the hull is not important as long as it is waterproof. Excellent models are made



The destroyer "JOHN ROGERS," D.D. 983, at full speed astern, in Warwick, Rhode Island. Built and photographed by Bob Morrow.



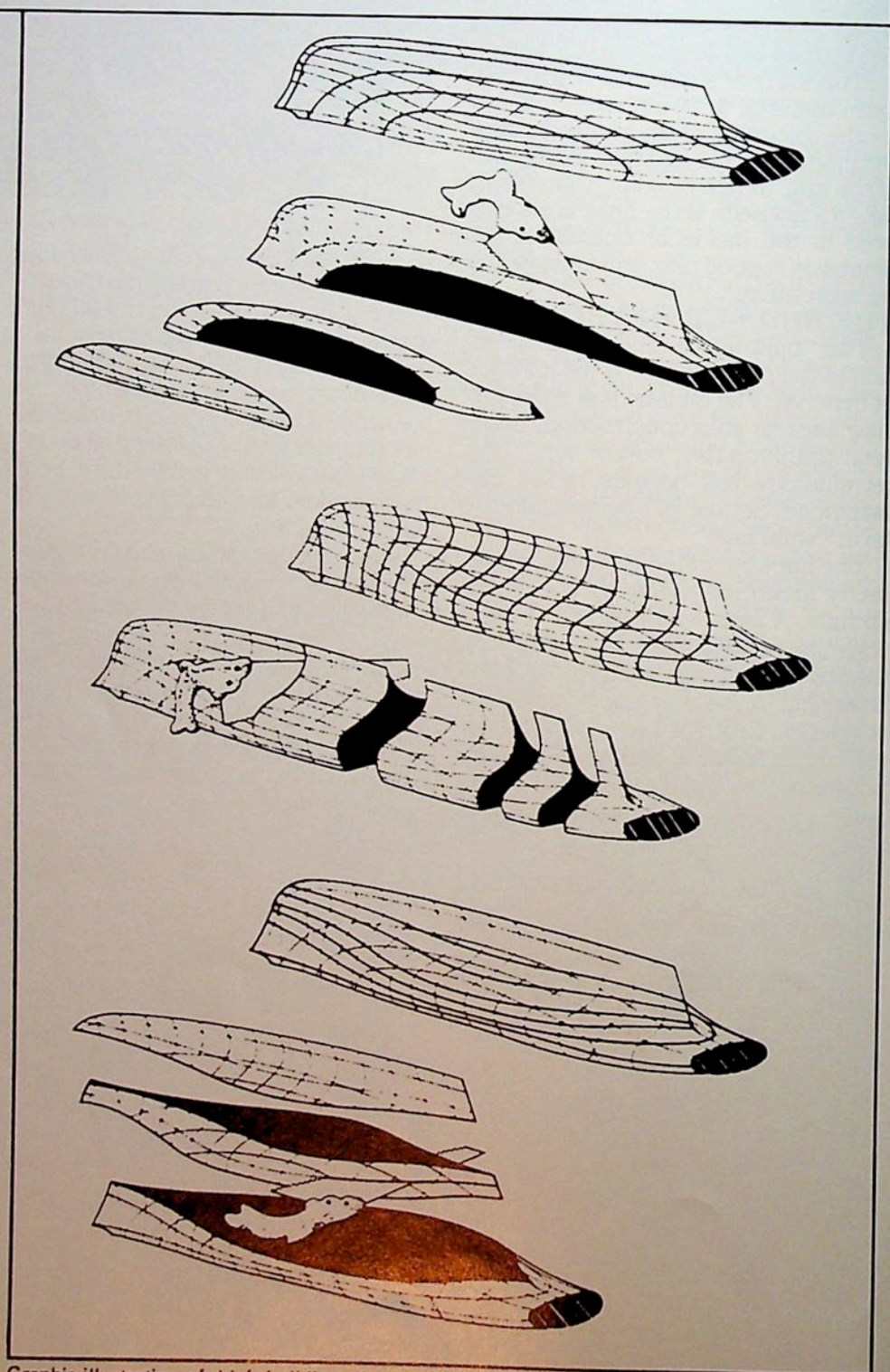
How a ship's hull is described by line drawings. Illustration courtesy of A. Richard Mansir, Moonraker Publications.

with balsa strip or plywood hulls shaped over plywood bulkheads. The waterproofing is accomplished by a fiberglass covering, epoxy sealing, or paints. The wooden hull is glued together and/or coated with epoxy internally, double coating, inside and out, as preferred. The finish and colors are painted on the outside. Most manufacturers offer some version of a model or group of models for the radio control market in their line.

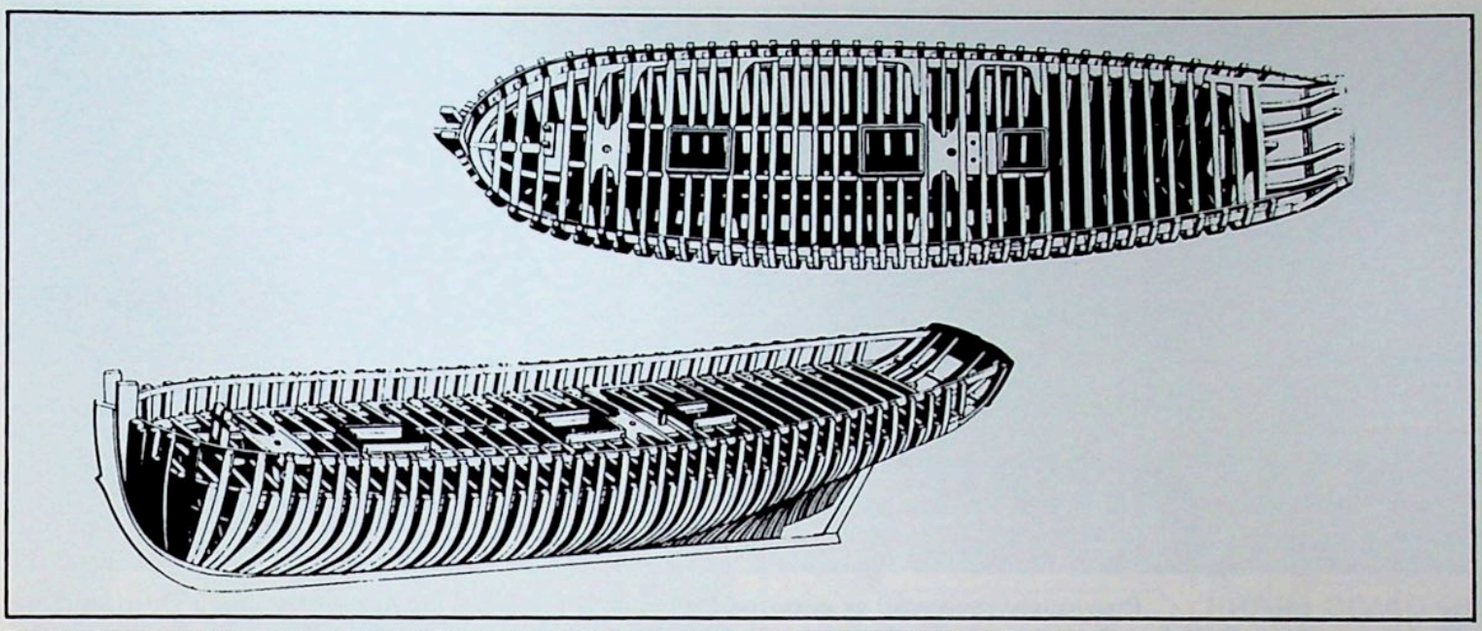
The modeler who builds using the wooden ship model kit with the intention of customizing it for radio control has a wide area of choice. He or she can secure from the commercial world the vessel of their desire. Internal bracing can and should be applied. Platforms to fasten radio control gear and mount power sources can be incorporated into the hull; in essence, redesigning. There are many potential trouble spots (leaks) with all the planks and seams in the built-up construction. This problem can be overcome with sealing.

Sealing the hull can be accomplished from either the inside (inboard) or the exterior (outboard) by painting the area with several coats of epoxy glue and/or paint. Another method is the application of several coats of polyester resins.

Similar in application to epoxy glue, there are two component parts to this method. They are the polyester solutions and their catalyst. The manufacturers of these chemicals used in novelty castings advise that you mix, according to directions, only small amounts at a time. The amounts will vary as to how much will be used in a limited time period. Setting time is controlled by the amounts of catalyst used in the mixture. Your working habits play the most important part in just how much is enough. Handicraft stores and paint outlets are your best sources of supply.



Graphic illustration of ship's hull lines, from top to bottom: Buttock lines, sections, and waterlines. Drawings by author Milt Roth.



Details of plank-on-frame construction, before planking, of course. Illustration courtesy of Vincento Lusci.

The solvent for cleanup is acetone. The vapors of acetone are potentially dangerous. Adequate ventilation is mandatory. The solutions as well as the solvent are both highly flammable. Extreme caution is advised.

There are several other sealing compounds for sale in the paint supply stores. Painting material that is used to seal tables, bars and other surfaces that require waterproofing is available. There is even a product in the paint shops containing the components for waterproofing with epoxy solutions that does not require a catalyst. Explain your problem to the people in the paint store. They are most helpful. Experimentation and investigation might prove interesting. Not everything a modeler needs is found in the hobby shop.

PLASTIC HULLS

Not truly a form of construction, but rather a shortcut in assembling, are plastic hulls. These hulls come in two types. The first, and the most familiar, is the one composed of pre-formed hull and pieces. They are sold as kits. The hull usually comes in halves, and the components to construct the remaining details of the model are pressure-formed. All of the parts to make the model are styrene pressure molded plastic. Many sizes and scales are offered and the represented vessels come in all prices. Perfect assembling and painting is probably the only test of the model maker's skills. The model can be customized if so desired. They can be, with customizing, made to accept radio control and power gear.

Customizing of a plastic ship model kit can be accomplished by using only specific formed parts, in the case of a modern naval-type, for instance, the assembled and painted hull and superstructure for a radio controlled version. Customize the interior to accept needed gear. Waterproofing the seam internally and possibly adding bulkheads is mandatory. This is a method, although loaded with potential problems, that is becoming favored by those who hate to build hulls and superstructure but love to build ship models using such a kit.

The other method of construction using "plastics," is one of a solid preformed hull. Several companies and makers of kits offer hulls that are shaped by pressure and formed by molding with the aid of heat. These can be homemade with very simple equipment. If they are in a larger scale, it could present a problem for the modeler to build without proper equipment. Smaller forms, such as, ships, boats, and even small hulls, can be made using the heat of a kitchen oven and the suction from a vacuum cleaner. This a subject in itself, no discussion will be offered at this time, perhaps in another presentation.

Several manufacturers, who began as "garage" or "cottage" industries, have evolved and are producing a wider range of hulls. The hulls are fabricated from fiberglass. This is also known as *glass reinforced plastic* or GRP.

Scaled and shaped hulls of historic sailing ships to be used in radio control sailing versions have been rendered in fiberglass. The hulls are shaped to a plug to achieve the positive shape. A negative mold is made to establish the outboard details.

Several coats of polyester resin are applied in the negative mold. The positive is then covered with polyester resin and forced into the negative mold. This unifies the polyester precoated negative mold containing the external details, such as, planking, portholes, hawse holes, decorations, etc. From that point on, after the hull has cured without warping in the negative mold, wood is used to complete the model. This method of building in wood from the deck up can also be applied to the plastic kit hulls. Great way for some of us who don't like to "build" hulls.

The selection of models to build is limited to the manufactured units or kits that are offered. For the most part, today's offering of radio controlled kits are limited to warships of more modern period vessels and quaint working ships, such as, tugboats, fishing trawlers, and pleasure boats.

The offerings of the commercial GRP hull makers will, if the project seems important or enough profit is involved, build a custom hull for their clients. The size may be in inches or as large as 10 to 12 feet. All hulls are in scale and are as historically accurate as possible. The advertisements of these "hull and kit" makers can be found in most ship model periodicals.

The larger established American and European manufacturers of ship model kits are offering molded hulls complete with the majority of parts and fittings needed to build an R/C ship, boat, submarine, or sailboat. Everything is furnished except the radio, power, and running gear. In some of the selected kits, plastic models included, some even furnish motors, shafts, stuffing boxes, and rudders. Optional equipment is offered. Lights, squirting hoses on fireboats, and sounds of a ship in action are available.

The material in the hull is vacuum-

Continued on page 54

JOMARINE "40/60 Deep Vee"

By DAVID FRANK . . . Previously reviewed as equipped with an 11cc K&B Outboard by Jerry Dunlap (Dec. '86 *Model Builder*), the author reports on the successful conversion back to an inboard.

The Jomarine "40/60 Deep Vee" powered by the K&B 11cc Outboard was reviewed in the December 1986 issue of Model Builder. *Using the 11cc outboard, the boat established a North American Model Boat Association record for C Outboard Mono heat racing.*

It was stressed in the article that the boat was designed for inboard power. The outboard application allowed me to set the record for this type of hull using the 11cc K&B Outboard. With the record established, the Jomarine 40/60 Deep Vee was set aside until time would allow for installing an inboard motor.

As it turned out, I never did get around to converting the boat over to inboard power. That task was graciously assumed by David Frank, a talented young model boater whose Sport 40 construction article appears elsewhere in this issue.

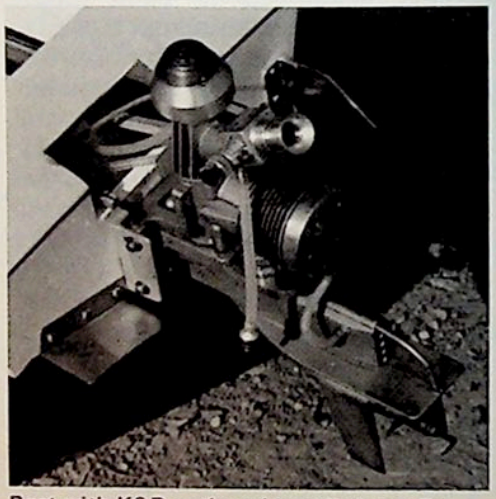
I was very pleased to accept David's offer of assistance on this project, as I was up to my eyeballs in other commitments. This was his first experience setting up a deep vee hull, and he did a super job. But I'll let him tell the rest of the story. Jerry Dunlap.

THE JOMARINE 40/60 DEEP VEE

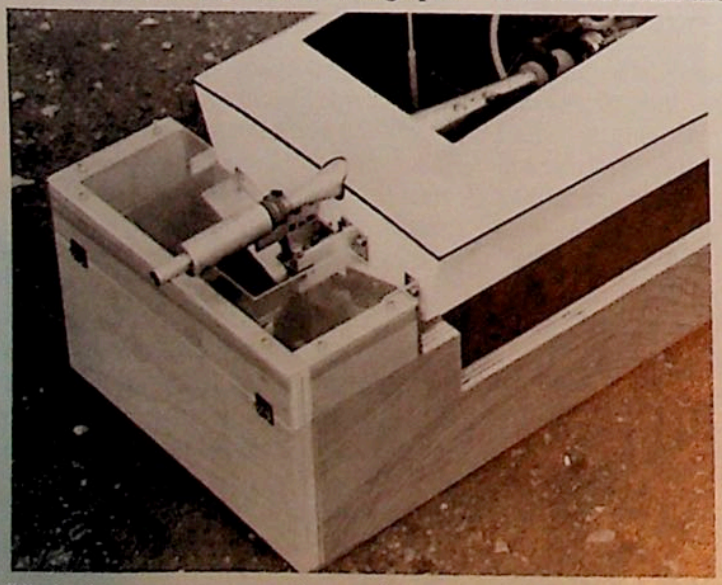
When I received the Jomarine 40/60 Deep Vee it was set up for outboard operation. I had to remove the outboard motor mount and fill the hole where the pushrods went through. The hull was now ready for inboard installation.

A decision I had to make before starting was whether to go surface drive or submerged drive for the propeller. The advantages and disadvantages of both types of drive setups are discussed in the excellent assembly manual. Submerged drive was chosen because the boaters in my area, the Northwest, have had good success with this type of drive.

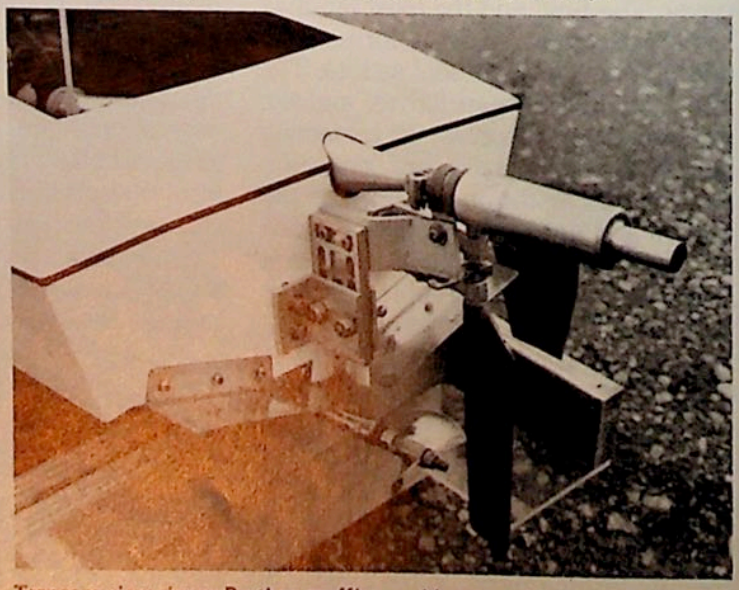
Before installing any systems in the boat, a boat stand was built for the hull. The stand holds the boat while it is being worked on and also serves as a starting stand. The isometric drawing of this simple stand should provide enough information for building one. It was built from 3/4-inch plywood and could be used for most any deep vee. The angle for the "V" shaped supports came from



Boat with K&B outboard installed, per December '86 article by Jerry Dunlap.



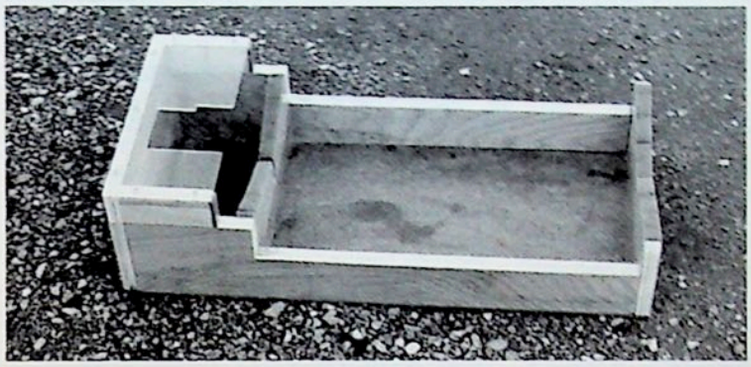
Flip-back prop cover on starting stand prevents unplanned contact with prop while starting the engine.



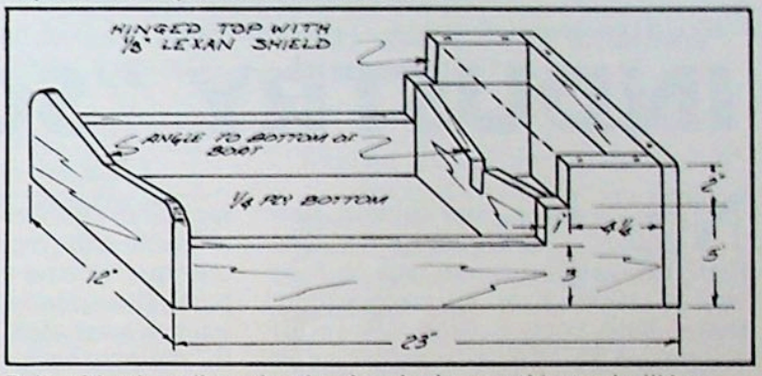
Transom view shows Prather muffler, rudder assembly, strut mount and strut, ride plates, and Octura X-452 prop.

Test runs on the Jomarine 40/60 Deep Vee show plenty of speed and smooth handling.

You know the driver has to be comfortable about a boat's handling to pull turns at speed this close to a marker!



Easily constructed boat and/or starting stand, besides being handy, is necessary for convenient and safe powerboat servicing.



Built with minor dimensional and angle changes, this stand will be suitable for many types and sizes of model powerboat.

the plans provided with the boat.

INSTALLING THE RUNNING HARDWARE

The plans provide locations for installing the running hardware and patterns for making items such as the ride plates, turn fin, and transom anti skid fin. The turn fin is made from brass, and installed using glass cloth and regular Hot Stuff. Regular Hot Stuff and glass cloth were used for installing several things in the boat. I think Hot Stuff works better than fiberglass resin for applying glass cloth, and it cures much faster.

The motor mount, an Octura "Humm Dinger," was installed next. This mount works well for reducing vibration and noise inherent in this type of hull. The Jomarine 40/60 Deep Vee comes with the wooden mounting rails and bulkheads already glassed to the hull. It was necessary to use an angle drill to drill holes for 8/32 blind nuts for the motor mount. The pre-drilled holes, which were spaced too far apart for the Humm Dinger mount, were used as a guide for location and angle of the mount.

With the mount and motor installed, it is possible to figure out where to drill the hole in the hull for the stuffing box. I figured the stuffing box hole would be 1-1/2 inches behind the engine cable collet, and 3/4 inch long. The plans for the boat include a template for a bulkhead to support the stuffing box tube. This bulkhead should be located a half-inch behind the cable collet and have a hole the size of the stuffing box tube. The bulkhead was lined up with the collet and tacked in place with Hot Stuff Super-T. Glass cloth and regular Hot Stuff were used to permanently install the bulkhead in the hull.

For a stuffing box, an Aeromarine 12-inch Stuffing Box was used. A 9/32-inch brass tube is slipped over the stuffing box and glued into the hull so the stuffing box can be removed. A piece of 3/16 music wire can be used to line up the stuffing box and guide tube to the collet. With everything lined up, the 9/32 brass guide tube was roughened with sandpaper and glued to the hull bottom using glass cloth and Hot Stuff. The music wire and stuffing box were then removed and the 9/32 brass guide tube cut flush with the bottom of the boat.

Because I enjoy working with metal, most of the hardware used on this boat was hand made. The instructions give examples of complete hardware kits that work well with this boat. The strut was mounted using 6-32 blind nuts and socket head screws. The strut depth was set at 5/8 inch. The stuffing box was then bent with a smooth arc and cut off where it meets the strut. An Octura Drive Dog was installed on a Prather Flex Cable, allowing enough room for an Octura X-452 propeller and about 3/8 inch of thread for the prop nut. A flat spot was ground on the stub shaft for the set screw in the drive dog.

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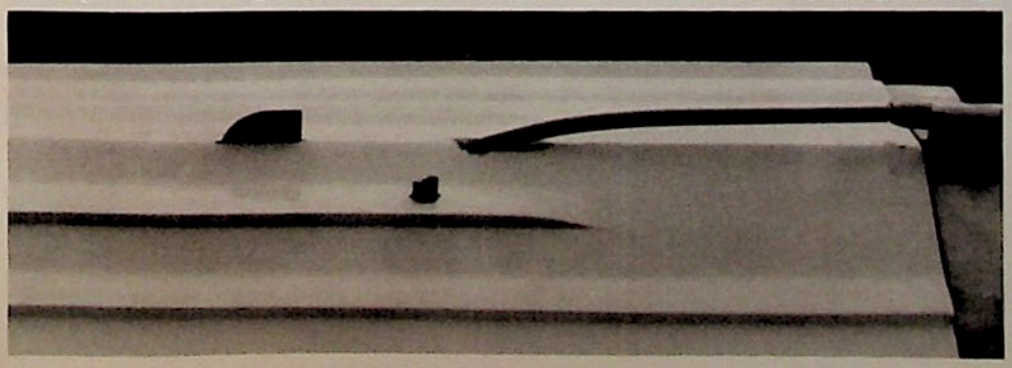
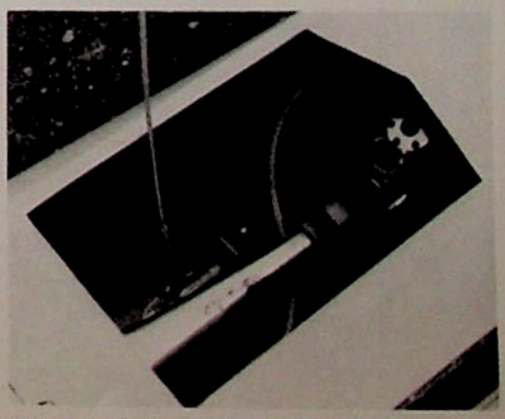
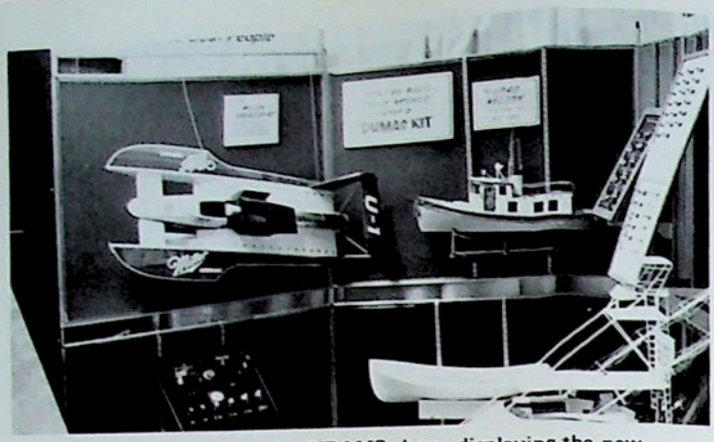


Bottom view of boat, showing turn fin, Octura Streamlined Water Pickup, and Aeromarine stuffing box.



K&B 7.5 Marine engine and Prather 7.5 pipe. Radio box can be seen under pipe.



Dumas Products' booth at the WRAMS show, displaying the new Miller U-7 Unlimited hydroplane and Lord Nelson tug.

Eric Goldschrafe, of Dynamic Models, with his latest Navy PBR (Patrol Boat, River).

INDUSTRY "SCUTTLEBUTT"

By RALPH WARNER . . .

New magazine, new column, new author. . .Well, not quite. The first two statements are true, but by way of introduction, let me point out that I have been writing a monthly column for *Model Retailer* magazine for the past seven years. "Retailer" is a magazine you will not see on your dealer's magazine rack, as it is available only in the model industry to manufacturers, hobby shop owners, and their suppliers. I normally write about R/C boat products and general trends in the industry. My background is not only as a model builder, but I have also been involved with retail sales and manufacturing for over 30 years. Fortunately I started when I was very young!

Publisher Bill Northrop views my knowledge of the industry and products over the years as a resource that can be of benefit to you, the model builder. This column will be used to present an insight into new products and trends which I see in the industry. It is not intended to be the new product column, which is usually based on a press release from the manufacturers, but it will be my intent to go into more depth and give my impressions of new products. It will also be an opportunity for readers to have a "man at the factory" who will respond to inquiries you may have relative to manufacturing and possible new products. I personally attend at least eight R/C shows around the country each year, and as a result, have established contacts with the various manufacturers in the industry and have written about their new products. This pipeline will give you the opportunity to make your needs known, and I will endeavor to inform appropriate manufacturers of your requests.

NEW STUFF

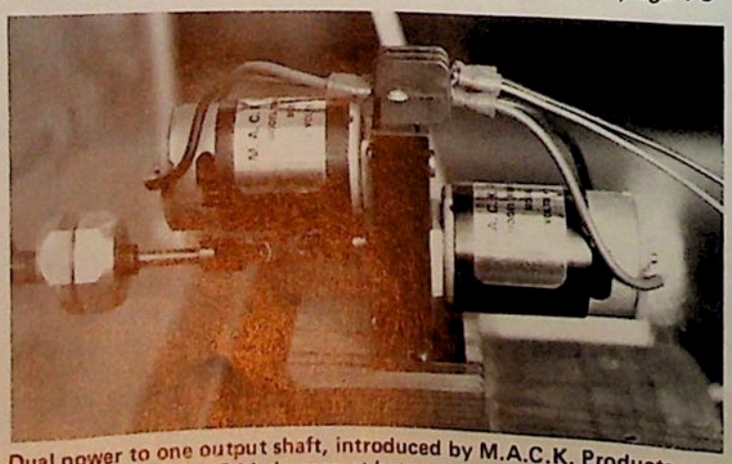
Some of you may have attended the recent W.R.A.M. show in New York. Unless you did, you may not be aware that there was a special industry day on the Friday before the weekend show days. Industry days give an opportunity for your hobby shop owner and his suppliers to meet with the manufacturers so that new products can be discussed and ordered, as well as questions answered about products already available. Industry days offer an opportunity for some manufacturers to show items that may be in the early planning stage that are not ready for display on the regular consumer days.

One product only seen on Friday was at the M.R.C. booth. A handmade prototype of a new boat was on display. The model is of a Wellcraft cruiser and is approximately 30 inches long. As you can see from the pictures, there is much more attention to detail than has been shown on the two previous scale electric boats that M.R.C. has done. Although all details are not yet firmed up, the kit is expected to sell for around $150 and will be available for the late spring or early summer market. It will be molded of vacuum formed plastic with injection molded fittings, similar to their current boats.

M.A.C.K. Products, P.O. Box 464, Long Branch, NJ 07740, had a new propulsion unit on display for all three days of the show. It is especially unique as it provides the power of two 540 type electric motors to one shaft and does it in a very compact "over and under" arrangement. It was turning a Dumas 1-1/2 inch, three-bladed prop at over 11,000 R.P.M. in their demonstration tank. List price for this model #2300 is $99.00, and it is available from hobby shops or direct from M.A.C.K. You might also check with them for your

Continued on page 70

Described in the text, this is a coming release by MRC. The Wellcraft cruiser is about 30 inches long, with plenty of detail.



Dual power to one output shaft, introduced by M.A.C.K. Products. Turns 1-1/2" Dumas 3-blade prop at better than 11,000 rpm.

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New Slow Jet™ extra-thick cyanoacrylate, professional-grade formulation, and new easy-to-use containers. Now the CAs you've always trusted are better than ever.

We've been paying attention.

You let us know what improvements you wanted in CA glues, and it's helped us make the Jet™ line better than ever.

It's why the words *Professional Grade* now appear on all the new Jet labels.

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It means that we're bringing true state-of-the-art CAs to the modeler and craftsman.

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And response to accelerated curing that leaves it rock hard and crystal clear.

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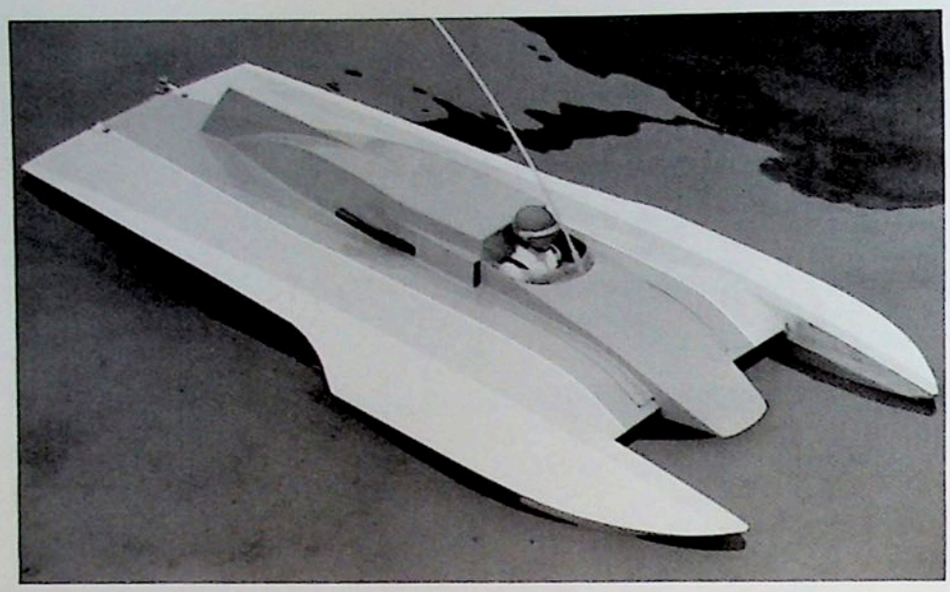


The "D.F. SPORT 40"

By DAVID FRANK and JERRY DUNLAP . . . All-wood construction is money-saving feature of this very competitive tunnel racer.

As a racing class, Sport 40 came into existence as an alternative to the more expensive and restrictive R/C Unlimited Class. Many model boaters like the idea of racing a conventional looking model hydroplane rather than an outrigger. For the true unlimited model advocate, the R/C Unlimited Class offers the opportunity to race a model of a real boat. However, the R/C Unlimited Class requires the use of a .65 cu.in.-size motor, and there are registration requirements.

The Sport 40 Class, while still requiring the hydroplane to look like a full scale boat, doesn't require the authenticity of the R/C Unlimiteds. Also, the use of a .40 cu. in.-size engine allows for a savings in the purchase of a power source.

Sport 40 is a recognized racing class in the North American Model Boat Association. I don't think it is a recognized class in the International Model Power Boat Association. NAMBA actually recognizes two divisions of Sport 40: Sport 40 I for front intake, non-Schneurle-ported engines, and Sport 40 II for rear induction, Schneurle-ported engines. The "D.F. Sport 40" meets all the NAMBA Sport 40 hull requirements. The boat shown in this article is intended for Division II competition.

ABOUT THE D.F. SPORT 40

David Frank, the designer of this model hydroplane, began model boat racing in 1986 and was named NAMBA District 8 Rookie of the Year. I first met David in the fall of 1985 when he called me up to ask for help with his Dumas "DragN' Fli 60" powered by a K&B 7.5. Although we were able to get the DragN' Fli 60 to run, David realized the boat was not going to be competitive.

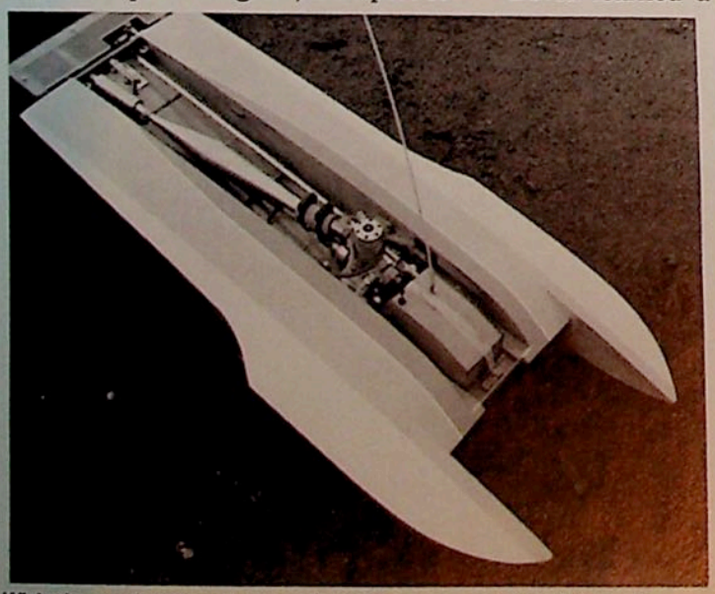
In October of 1985, David built another Sport 40 off a set of plans provided by a fellow member of the Puget Sound Model Boat Club. David used this boat to capture the High Point Award in District 8's 1986 Sport 40 Standard Class. The Standard Class designation was for those who had little or no previous model boat racing experience.

David learned a great deal about model hydroplanes during the 1986 season. In September of 1986, he redesigned his Sport 40 in hopes of making it lighter, easier to maintain, and faster. The D.F. Sport 40 was test-run in mid-October, and all of David's hopes were realized.

I have driven the boat on many occasions, and it handles as well as any Sport 40 I've ever driven. At the time this article was submitted, another D.F. Sport 40 is being readied for the Dunlap Racing Team's use for the 1987 racing season.

The boat incorporates all the latest Sport 40 "tricks." The radio box is located in front of the engine, the engine is recessed into a bottom pan, and the sponsons feature offsets and steps.

Although Ed Fisher had nothing to do with the actual designing of this boat, many of the design features of the D.F. Sport 40 were influenced by Ed Fisher's Sport 40. There's no sense in reinventing the wheel! David willingly admits he did some serious "eyeballing" of Ed's very successful Sport 40. Ed Fisher's excellent running epoxy



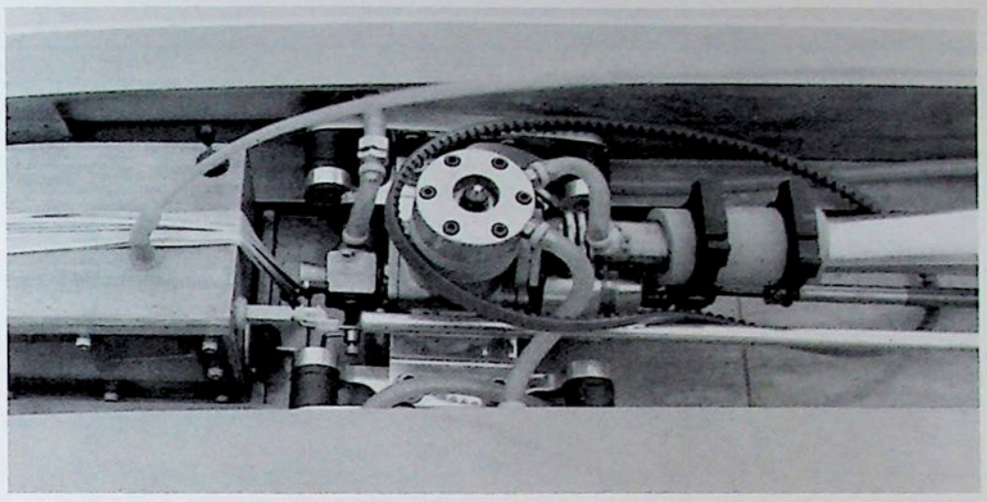
With the cowl removed, the radio box, engine, and tuned pipe are exposed. Design allows easy access to all systems.

Transom view shows Prather muffler, water pickup, strut, and rudder. Note aluminum tube rudder pushrod.

glass Sport 40 costs something like $250 for just the hull. The material bill for construction of the hull of the D.F. Sport 40 should be around $50. However, a bunch of bucks will be spent in purchasing the radio, engine, and hardware for this boat, or any Sport 40.

BUILDING THE D.F. SPORT 40

Compared to building a tunnel hull or deep vee, there's a little more work involved in building a hydroplane. Hull construction involves the use of a building fixture that can be used as a boat stand when the boat is completed. To assist in the construction of the D.F. Sport 40, the assembly process has been numbered. Studying the plans and construction photos will help in the construction of the boat.



Nice close-up of K&B 7.5 engine mounted in Octura "Humm Dinger" motor mount. Steering and throttle linkages are also visible.

Hull Construction

1. Cut out all the patterns from the plans that are to be cut from 3/32 plywood. Leave about 1/8 excess paper around the patterns.

2. On a sheet of 3/32 plywood, lay out all of the frame patterns (1 to 7) and any other parts made of 3/32 ply.

3. Pick up each pattern, one at a time, and spray the back with a spray adhesive like 3M 77. Wait about 20 seconds, and glue it down where it was.

4. On the second sheet of 3/32 ply, lay out frames 8 to 11.

5. Cut out all the parts. Trim each part as needed.

6. Sand and smooth all of the parts with 100-grit sandpaper. Staple or tack frames 8 and 11, 9 and 10 together, and sand to match the shapes.

7. Laminate the two No. 7 frames together and the two right hand pieces of the No. 4 frames with Special T. The smaller part of the two No. 4 frames should go in front. *Note:* When right and left side is referred to, it is looking from the rear of the boat.

8. On frames 1 to 6, leave the center section cutouts in place while sanding and drilling. If you are using an Octura "Humm Dinger" motor mount, drill frames 9 and 10 together where marked on the pattern. If you use a different mount, it is suggested you assemble the frame and mark and drill the holes for the mount before gluing.

9. Remove the patterns from the frames. If you experience difficulty peeling the patterns from the frames, try wiping a little paint thinner on them and scraping with a putty knife.

10. Using the plans, construct the building fixture. Use straight pieces for the sides. When you are finished building the boat, the fixture can be used as the starting stand. Using spray adhesive, coat the building fixture, and cover it with waxed paper to prevent the framework for being glued to the fixture during construction.

11. Slip the frames together and position the framework on the building fixture. Trim the parts as necessary for a good fit.

12. The building fixture is a 1/4-inch narrower than the frame to allow easy removal while using it as a starting stand. When lining up the frames, use an inside edge of frame 9 or 10 against the fixture side to keep things straight.

13. Check for a good fit at the top and bottom of all frame joints. If everything is aligned, start at the front and work back, gluing the joints on frames 8 and 11. Go back and glue the joints on frames 9 and 10. Be sure to keep the frame flat on the jig and in alignment at all times.

14. Remove the lined sections of frame 3. A hacksaw blade works well for this.

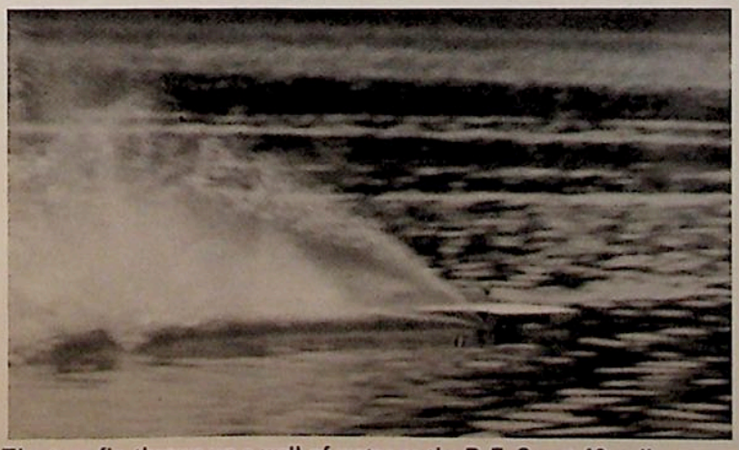
15. Cut out the bottom covering sheeting from 1/16 ply. Remove the framework from the building fixture, and place the bottom sheeting on the fixture. Place the framework back on the fixture, and adjust the bottom pieces so they meet in the middle of frame 5. Don't glue the parts of the frame centers that are to be removed. Check to see everything is straight, and tack the bottom sheeting to the framework. Recheck everything and then glue the parts to the framework. Use Special T to make fillets in every joint.

16. Glue the center section drop rails in position. Then glue the center bottom sheeting to the rails.

17. Remove the center sections of frames 2, 3, 4, and 6.

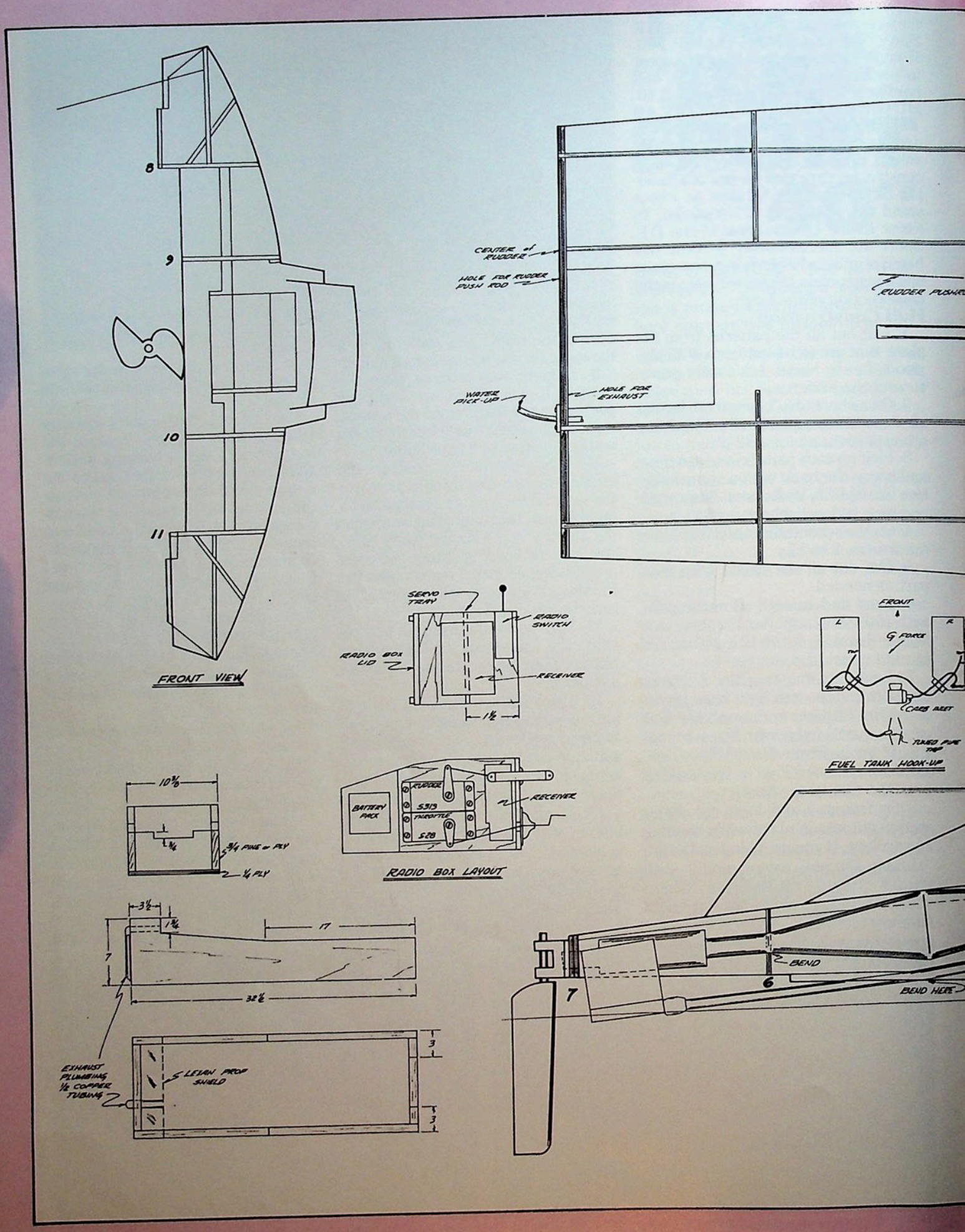
18. Glue the strut reinforcement piece in place. The edges are tapered for appearance.

19. Set the rear side sheeting in place, and mark a line on the back of frame 4 where the sheet touches it. Glue a piece of 1/8 by 1/8 stringer 1/16 inch above the line. Glue the side sheets in place. Glue a piece of 1/8 by 1/8 stringer along the top edge of the side sheets. Sand



The turn fin throws up a wall of water as the D.F. Sport 40 pulls through a corner.

Boat is completely out of the water in this full-bore pass. Only the turn fin, prop, and rudder (thank Heaven!) are making contact.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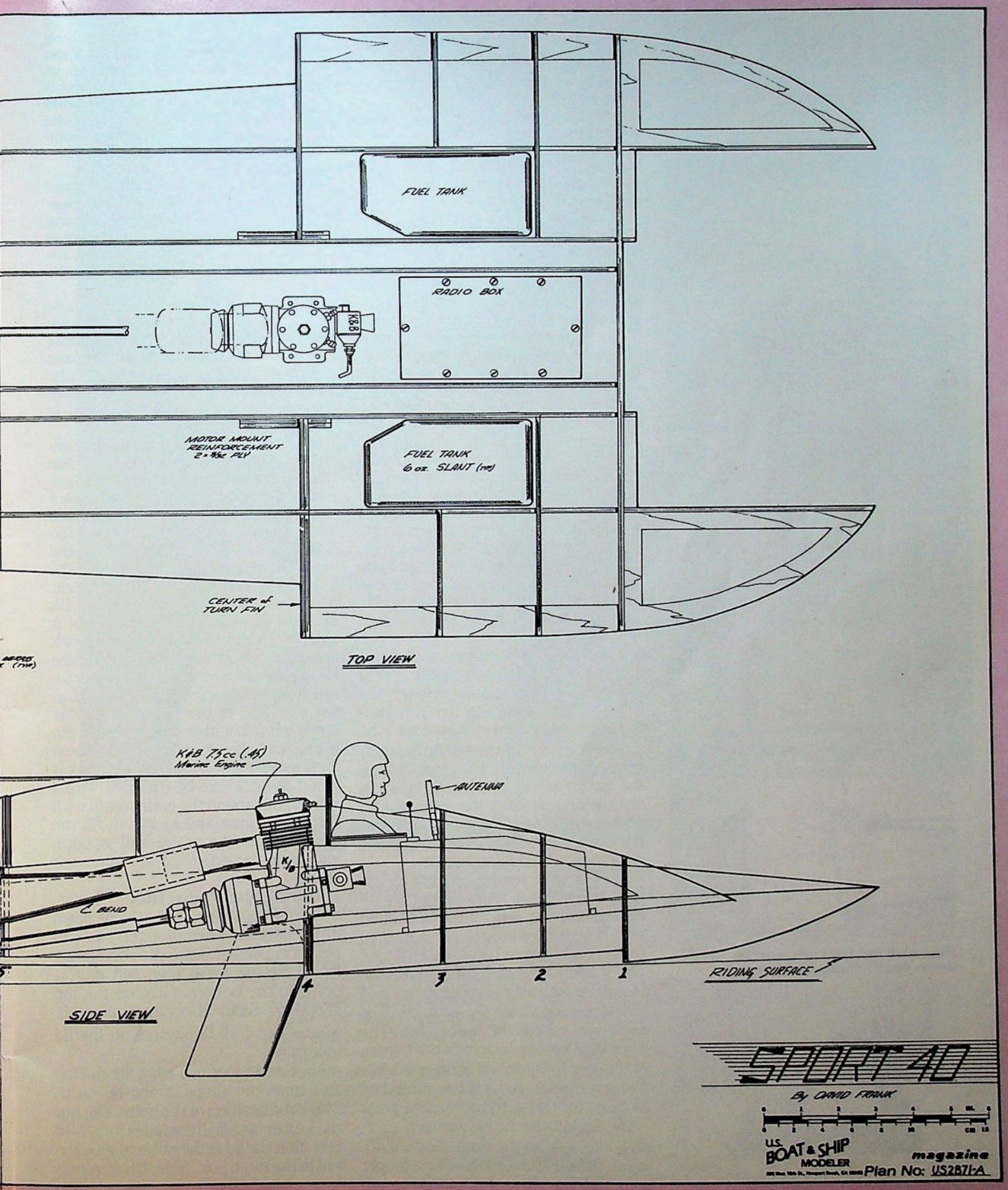
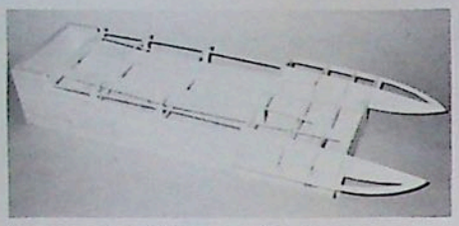
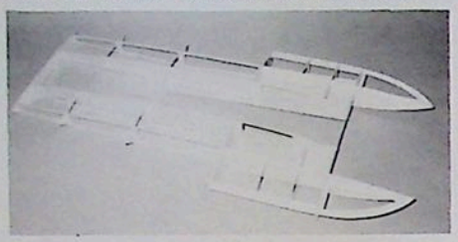
FRONT VIEW
CENTER of RUDDER
HOLE FOR RUDDER PUSH ROD
RUDDER PUSHRO
WATER PICK-UP
HOLE FOR EXHAUST
SERVO TRAY
RADIO SWITCH
RADIO BOX LID
RECEIVER
1½
FRONT
L
R
G FORCE
CARB INLET
TUNED PIPE TRAP
FUEL TANK HOOK-UP
10⅞
¾
¾ PINE or PLY
¼ PLY
BATTERY PACK
RUDDER
S3119
THROTTLE
S28
RECEIVER
RADIO BOX LAYOUT
3½
1¾
17
7
32⅞
BEND
6
7
BEND HERE
EXHAUST PLUMBING ½ COPPER TUBING
LEXAN PROP SHIELD
3
3



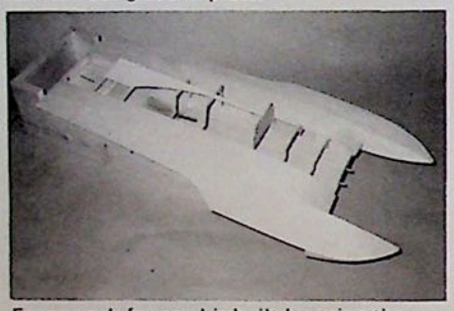
(NOTE: A 3 x 7-1/2 foot sheet of full-size patterns (not shown) is included with the plans.)



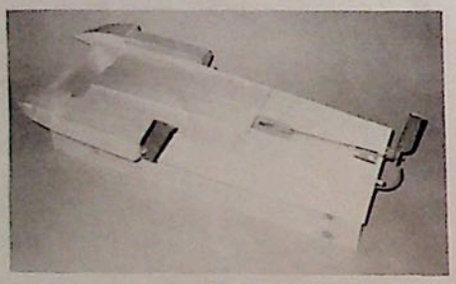
Framework held in assembly alignment by building fixture . . also used as boat stand.



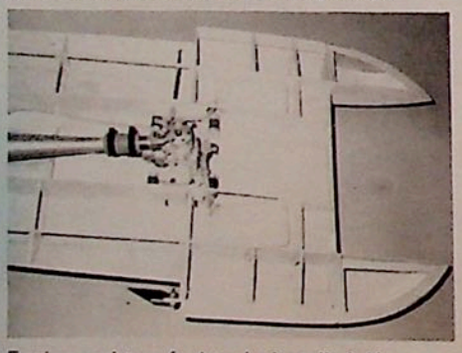
Frame out of building fixture, with some of tunnel floor glued in place.



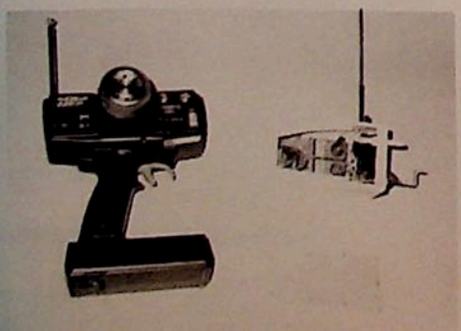
Framework for cowl is built by using the hull as an alignment jig.



Bottom view shows turn fin, shaft log, shaft tubing, strut, rudder, and water pickup.



Engine and two fuel tanks installed. Humm Dinger mount reduces vibration and noise.



Radio box with lid removed. Neat! Futaba Magnum Junior transmitter.

flush with the top of the sheet.

20. Glue the front sponson formers in place. Glue the sponson drop rails in position.

21. Shape the edge of the outside sponson former with a shaver or sanding block.

22. At this time, seal the frames that are to be covered with deck sheeting and the back of the sheeting. K&B Super Poxy Clear works well for this. This is important, because if any moisture gets inside the hull, it will raise the grain on the outside under the paint.

23. Glue the sponson side sheeting in place and front and back of the sponson.

24. Glue the remaining sponson sheeting in place on the framework.

Hardware Installation

25. The motor mount reinforcements are made by laminating two pieces of 3/32 plywood. Position these in place, and mark through the holes in the motor mount. Drill the holes to accept the 8-32 blind nuts. Realign the pieces, and glue in place. Install the blind nuts.

26. If you plan to use an Octura rubber motor mount, it must be modified to clear the cowl and rudder push rod. First, cut off the round, vertical parts on the mount rails. Then turn the rails and cut the remaining bolt off. If you want to take some weight off the mount, you can drill the insert out and thin the lower part of the inside rails down to 1/4 inch. Doing all of this can remove about four ounces.

27. Install the motor and motor mount in the boat. Insert a piece of 3/16 shaft in the cable clamp through the hole for the stuffing box. Cut the stuffing box guide tube to 6 inches and the stuffing box to 13 inches. Slide the shaft through the hole for the strut. Adjust the mount as necessary to be sure the shaft is straight. Slide the outer tube up so it just comes through the bottom of the boat. Glue the outer tube in place with Super T and glass cloth.

28. The strut, rudder, and turn fin can now be mounted. These parts are all mounted using 6-32 bolts and blind nuts. The rudder bracket is mounted in the center of frame 10, as shown on the plans. Mount the turn fin as shown on the plans with an angle between 7 and 10 degrees. To attach the strut, it will be necessary to bend the stuffing box. The strut depth is one inch from the bottom of the boat to the center of the rear bearing in the strut. Bend the stuffing box to allow for this setting.

29. Install the thrust washer, drive dog, and prop on the shaft. Leave sufficient threads for a prop with a longer hub. Cut the drive shaft cable to the proper length, and solder the end to prevent fraying.

30. A water pickup can be made by bending a piece of 3/16 brass tubing and soldering it to a piece of 1/32 brass sheet. Screw this to the transom as shown on the plans. The water outlet is also made from a piece of 3/16 brass tube and should exit the left side of the boat, allowing a view of the water cooling exit as the boat is running.

Top Sheeting

31. All cracks between sheeting and frames should now be filled with Special T to prevent water from entering the hull. The inside surface of the wood should be sealed with clear epoxy. Allow to dry overnight before applying the deck.

32. The top sheeting can be made from either 1/32 or 1/16 ply. Seal the underneath side of the top sheeting before gluing it to the framework. If you want a lighter boat, use the 1/32 ply. However, the 1/32 will show the ribs underneath in a few places where it is glued to the frames.

33. Level the tops of all the frames with a sanding block. To prevent the hull from twisting during the application of the decking, it is recommended the boat be placed back on the fixture and map tacks used to tack it to the fixture. Apply a bead of Super T on the top of the frames in the front half of the boat. Lay the sheeting on the deck. Starting on the inside frame 9 and 10, hold the sheeting down and shoot it with a kicker like Hot Shot. Work around the front edge with the kicker. Be careful to avoid a bubble in the middle. Keep the inside edge straight. Lift the rear half of the sheeting and lay down a bead of glue on the rest of the frames and affix it using kicker. Repeat for the other side. After the sheeting is glued down, it can be trimmed with a shaver. Go around the entire seam with thick C.A. glue and kicker to fill the cracks. Sand the entire hull smooth, and keep the edges of the sponsons sharp.

Building the Radio Box

34. Start by gluing the backside down to the bottom. Then glue the two end pieces in place. Locate the correct position for the servo tray, and glue it down to the bottom. Glue on the top sheeting. Sand the edges smooth. Mount the 4-40 blind nuts on the lid mount rail.

35. Use a piece of Lexan for the top and trace the shape of the lid on it. Mark the position of the holes. Cut out the Lexan, and drill the holes for a 4-40 bolt. Bolt the lid to the rail, and glue the rail to the radio box. *Note:* If a different

Continued on page 51

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No high speed lens needed to stop the action in this mural-like scene at the nearly becalmed Mission Bay Model Yacht Basin, San Diego, CA.

S.C.R.S. for MARBLEHEADS

By ANDY LITTLEJOHN, Sr. . . . The 50-inch Marbleheads provide a fine entry level class in the AMYA for newcomers to R/C sailing yachts. Forty skippers competed at the Dec. '86 regatta at Mission Bay, San Diego.

Model sailboat racing in Southern California has taken on a new look over the past five years. The sport has seen new materials of complex chemistry work their way into the hands of the amateur designers and builders who are the backbone of the sport. From heavy 22-pounders down to 10 pounds and under in just 10 years, means to this writer that a lot of progress has been made. The 50-inch Marblehead Class, which is an open design class with certain measurement requirements that are not too difficult for the novice builder to meet, has been the catalyst for improving the sport, and has helped update other class boats.

Some 10 years ago, Byron Sansom, of San Diego, suggested at one of the classes regattas, that a series of races be set up at the different model clubs, to help model skippers learn how to sail and to try out their new designs or ideas. Four regattas have been sailed each year, to become known as the Southern California Race Series for Marbleheads, or simply, the S.C.R.S. Bringing together a good number of boats on a lake has attracted many new skippers. Some have had big boat experience, which helped them to quickly take command of their craft.

The December 6-7 1986 weekend was the twelfth meeting at the San Diego Argonauts' pond in Mission Bay.

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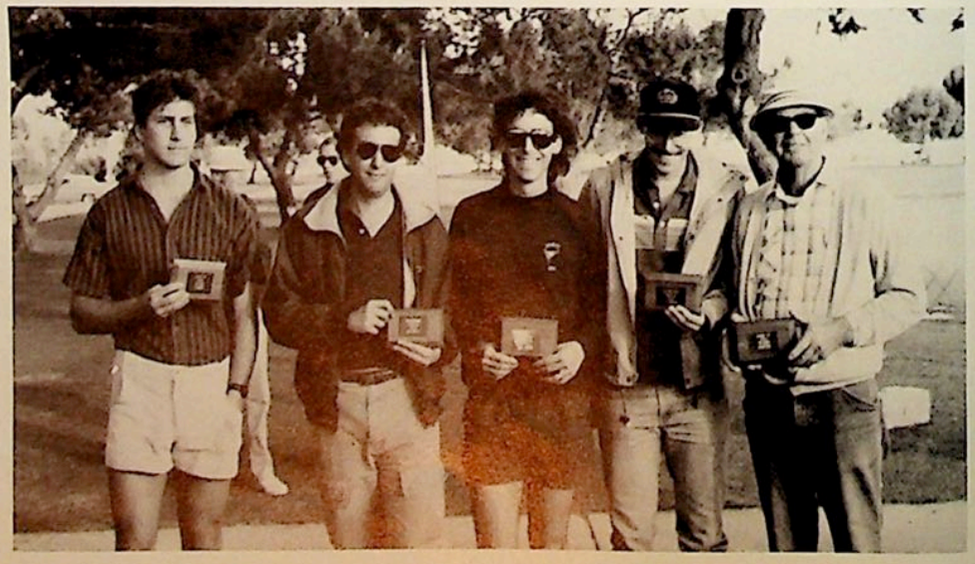
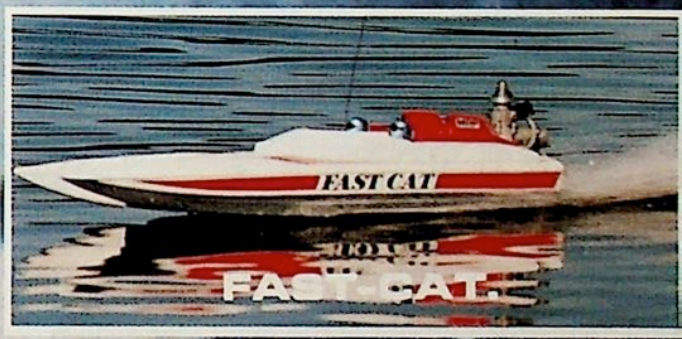


Winners of the December S.C.R.S. for Marbleheads (l to r): Lou Porro 1st, R. Langbord 2nd, J. Elmaleh 3rd, T. Allen 4th, and S. Johnson 5th.

National Championship Boats.



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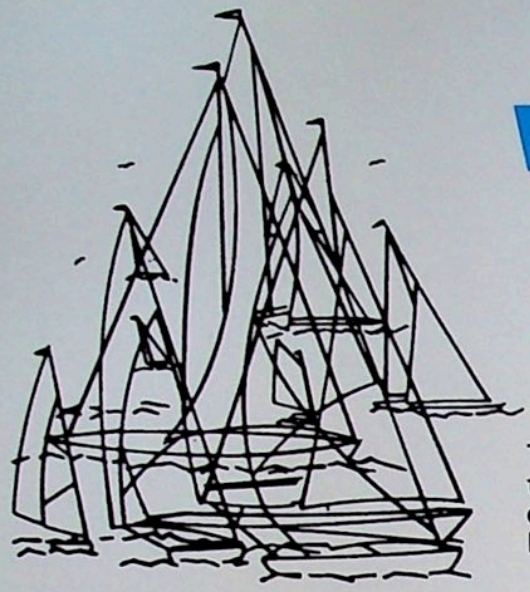


WATERLINES & CURRENTS

The author of this column intends to make all of us put on our thinking caps, with the idea that if we really understand *why* certain things are done, we'll do them better and have less problems along the way.

By FRED LEHMBERG . . .

It has been said that the start of an article is the hardest part. This is not exactly true. The truly difficult, trying (perhaps agonizing) thing is the selection of a name for a byline that the writer is stuck with forever! It was after much "cut and try" that this title was selected and will be the byline name in articles to come. Why "Waterlines & Currents"? In the dim light of this room I can't see the gentleperson (one must be careful) who asked the question, but the answer follows.

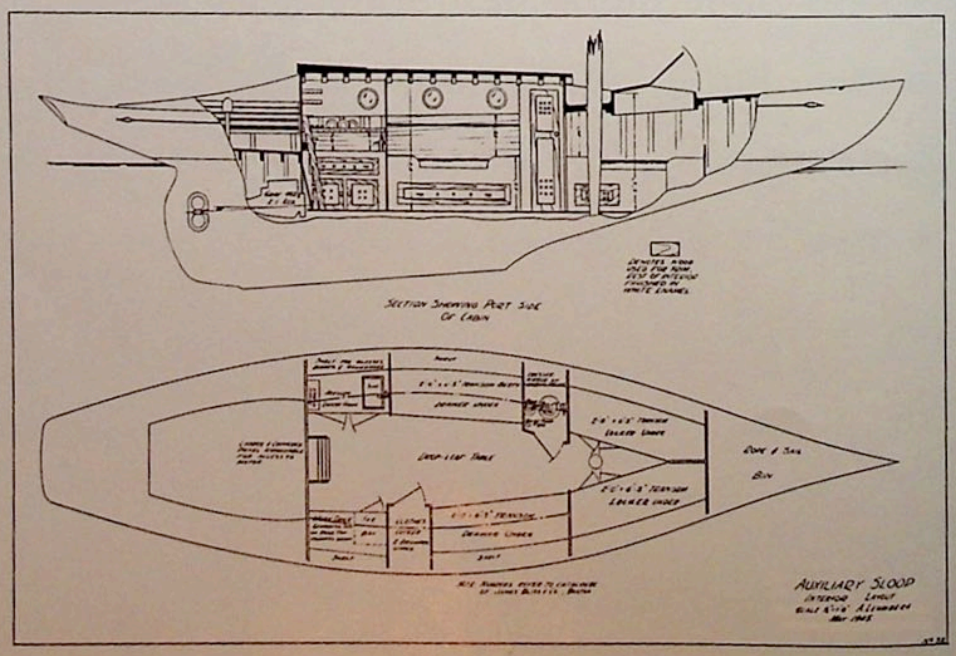
Waterlines are planes slicing the boat hull parallel to the water surface. The Load Waterline (LWL) is that slice right at the point where the boat floats. The shape of these lines, above and below the LWL (speaking generally, for other lines called buttocks and diagonals also do so) define the purpose of the hull. The purpose might be speed, either upright or heeled over; the ability to carry weight or cargo; or perhaps the ability to rise out of the water, or plane. Therefore, we might say an understanding of what the waterlines tell us can let us "read" a set of lines; such as, the illustration, and understand what it tells us. 'Waterlines" in the title, therefore, implies that information is to be supplied about what the size and shape of a problem (or discussion) is and what is its use or application.

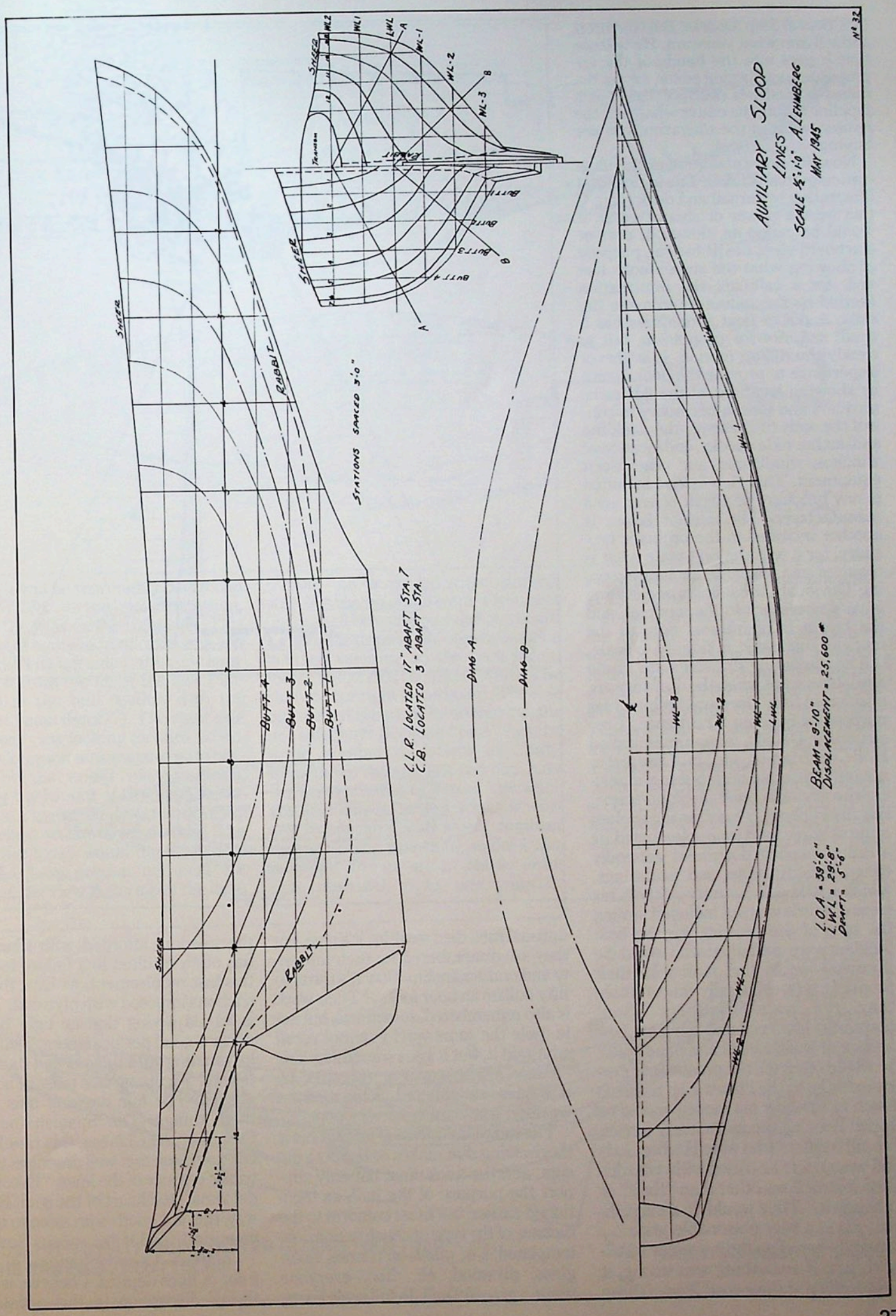
Currents? Ah, now we get devious. Currents are flows of water, air... AND INFORMATION! In the preceding paragraph we were advised of the size and shape of an issue, and what was its purpose. A flow of information will tell us what to do to accomplish the purpose. We have derived a title for an outstanding series of articles...a lifetime project! *Waterlines* (defined issues) & *Currents* (means of resolution) will be the title of this first article and the masthead title for the succeeding articles.

This first article provides an overview of the tentatively planned program and a statement of the column objective. This objective is to provide the readers with the background to improve and to make easier the task of scratch-building from a set of lines, sailplans, or elevations, and the principles of modifying the full scale plans to allow scale-like operation of a model. (This applies to certain types of power hulls and *all* sailboats). In addition, the objective includes the establishment of a reader point of contact for help in design and technical problems. This includes sail, power and steam. The plan set in the illustrations will often be referred to, redrawn, etc. in the succeeding articles. We shall very shortly have a few comments on them in this first WL&C (Waterlines & Currents).

The next WL&C, and a number more, will illustrate how to interpret and produce a "set of lines"; such as, the figure titled "Lines." This drawing depicts the actual shape of the hull, and allows reproduction of compound curves. Each article shall consist of a number of pictures of the drawing in process. These articles may be sandwiched between others to keep from boring readers not interested in "lines."

Also to be included are stability calculations, fore/aft and athwart ship. Explanation of the metacenter and displacement curve would be appropriate at this time, too. This can go on and on! Articles on steam engine requirements, how to select propellers for the hull and power, when to use Reynolds' Number, Froude's Number (and other numbers) in similitude calculations; the subjects are virtually endless. (*Don't use Sally's number. She has very little interest in boats! wcn*) The important point for you, the Reader, to do is write the editor of

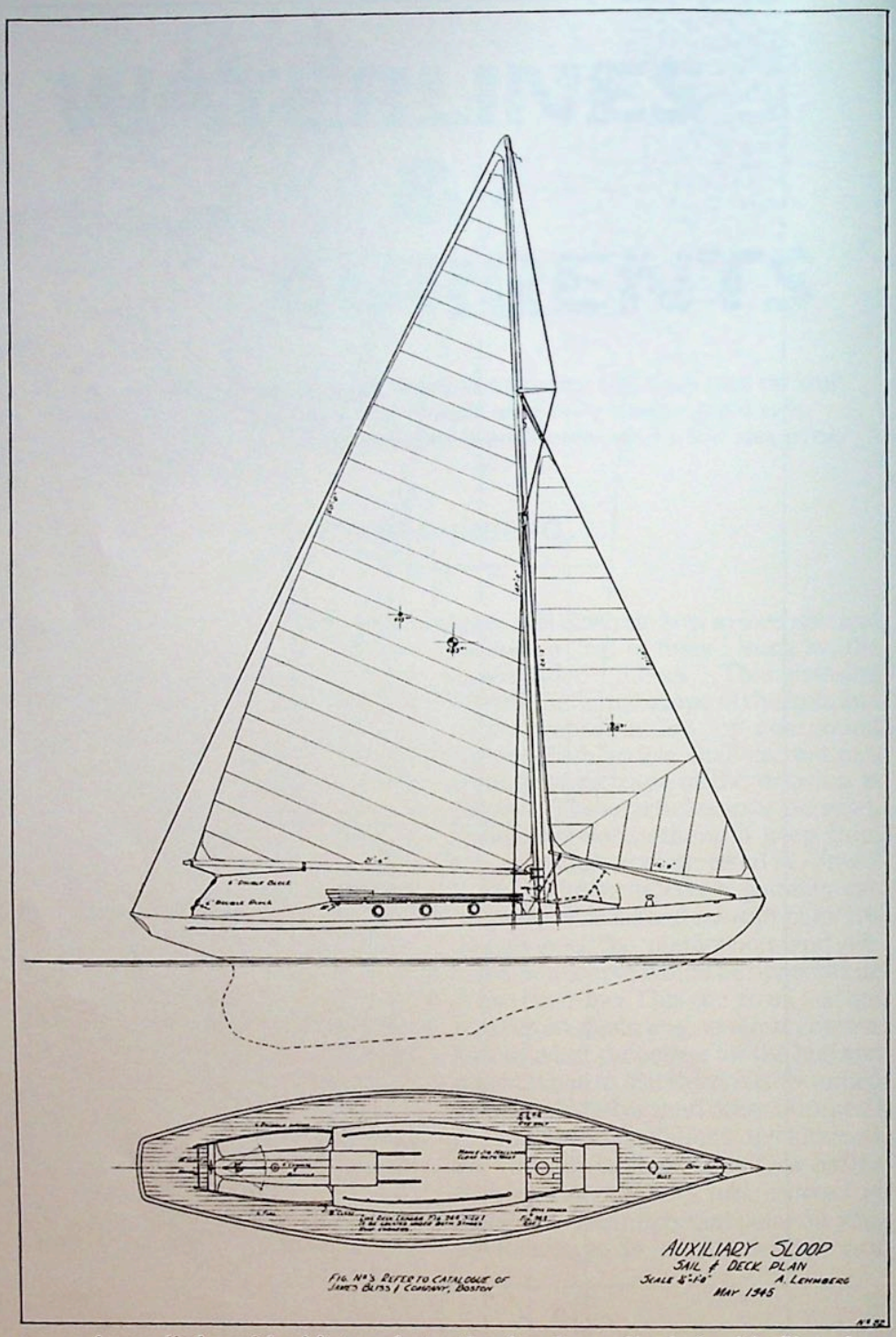



AUXILIARY SLOOP
LINES
SCALE 1/2" = 1'-0"
A. LEHMBERG
MAY 1945
№ 32
SHEER
RABBIT
STATIONS SPACED 3'-0"
BUTT 4
BUTT 3
BUTT 2
BUTT 1
C.L.R. LOCATED 17" ABAFT STA. 7
C.B. LOCATED 3" ABAFT STA.
DIAG A
DIAG B
WL-3
WL-2
WL-1
LWL
BEAM = 9'-10"
DISPLACEMENT = 25,600#
L.O.A. = 39'-6"
L.W.L. = 29'-8"
DRAFT = 5'-6"

U.S. Boat & Ship Modeler, Bill Northrop, and tell him what you want. He will see that it gets into the hands of the appropriate contributing editor, for our domains sometimes overlap! Too, it is a pipeline telling the editor what you, the reader, want in the magazine you are buying!

Now, for an explanation of the illustration in this WL&C. The logical first illustration is the sail and deck plan. If this were a power or steam vessel, it would be called an elevation, port or starboard view, etc. It has the purpose of showing what the vessel looks like and, for a sailplan, the information needed by the sailmaker to make the sails. A power boat sometimes has a small sail, not for propulsion, but to steady the rolling motion. It is also of importance to provide the deck layout by showing locations of the fairleads, travelers and blocks necessary to control the sails (if present), the dockline and anchor rode chocks, and location of winches, windlasses, and other deck equipment. This view is also included in any brochure of a boat offered by a manufacturer. The interior layout is another included in the ordinary brochure, for it tells the first mate what is required and available for housekeeping. Obviously, the sailplan or elevation is very necessary to the modeler, and the layout is of interest only to the modeler interested in fidelity to scale.

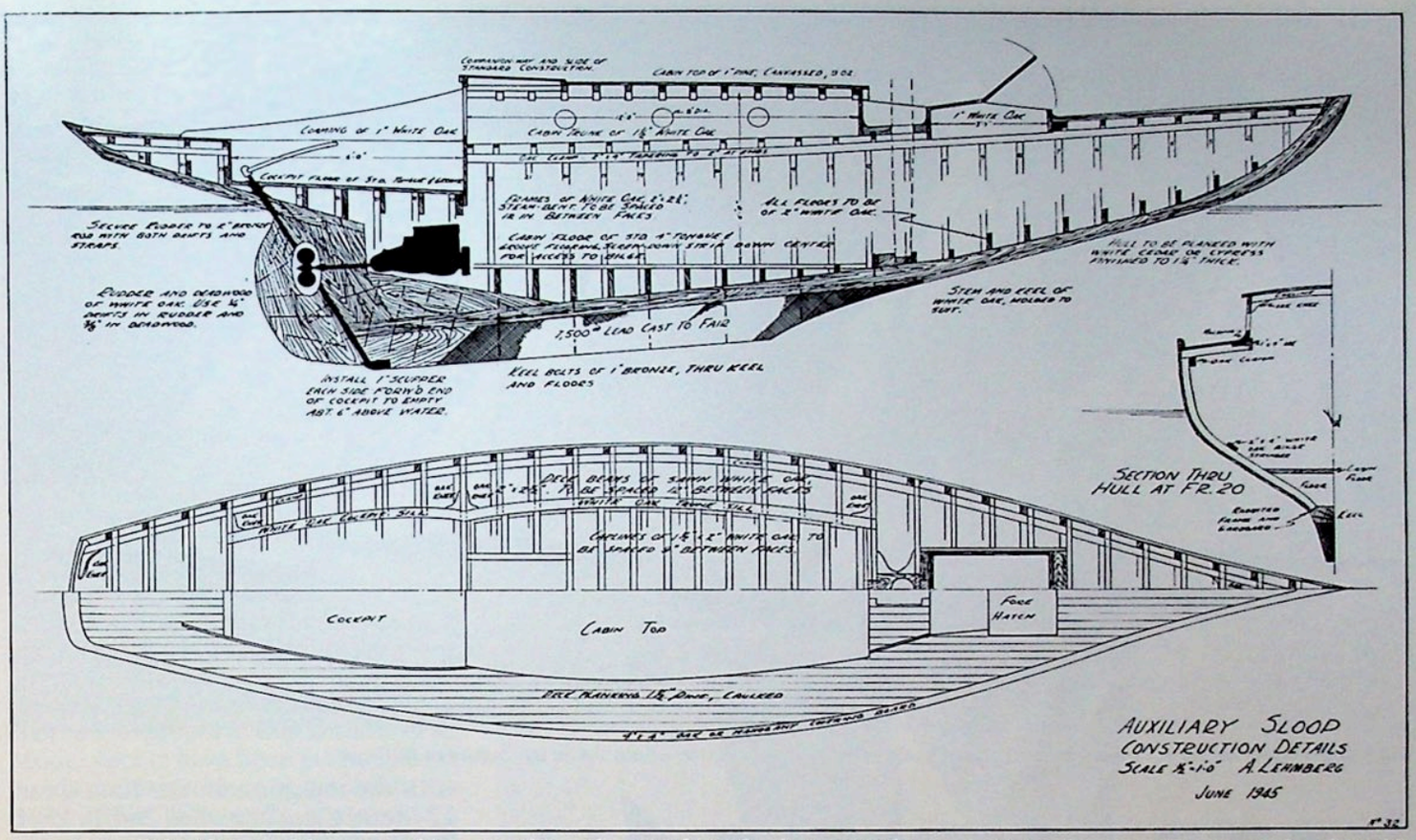
The remaining drawings are rarely available except when the drawings are purchased from the naval architect for purposes of building. The drawing Construction Details, sometimes called Hull Construction, etc., is of interest to not only the scale buff, but to a modeler who wants to build plank-on-frame, like the big boys. This drawing is often quite skimpy, for it is supplemented by a rather explicit document generally called Specifications and Scantlings, which spells out the nitty-gritty. This mess o' words was not included around the turn of the century, for the boat builders were craftsmen who would die if anyone would find fault with their product, who generally knew more than the naval architect about scantlings (material and size) and how a piece of wood twists and bends. Too, he would often tell the prospective customer to go to the blazes if he tried too much to say how his money was to be spent! Even as late as the early forties, I recall builders who were Harbor Gods and were not to be trifled with, who disliked instructions other than "fix it" or "change it." They would do a magnificent job at a very reasonable price . . . generally based on the customer's ability to pay. If something was wrong, it was rectified at their cost! Few of these



unusual men died wealthy, it's true, but they are remembered for their integrity and craftsmanship. Now it's thirty to fifty dollars an hour for. . .? Their work is also remembered, sometimes, but not in quite the same way! I cannot recall who said it, but it goes something like, "A man's true worth is measured by how he is remembered. Some men are wealthy; some are very, very poor."

The next illustration is lines. This is the drawing that makes or breaks a design, and the lines must not only support the purpose of the hull, as mentioned earlier, but must conform to the dictates of the type of construction contemplated; i. e., plank-on-frames, fiberglass, plywood, etc. Too, everyone wants a graceful hull. In full-scale boats, the freedom afforded with fiberglass has often resulted in a failure to meet this last requirement, as have the restrictions imposed with plywood. There is an old saying that an ugly boat is never a good performer, for a satisfactory mating with the hull and the water flowing over its surface must be accomplished. The line drawing tells all of these things. The Spanish (not the French or the Chinese, this time) have an expression that well describes the intrinsic essence of the lines, "El corazon del alma," the heart of the soul. By the way, this is a good expression to try on your girl friend if she speaks Spanish!

I digress. An understanding of what a set of lines depicts, I believe, is worthy of discussion in this article, al-



though it will be thoroughly covered in a later WL&C. In the lines illustration, look at the view on the right side. This is a view of both the front of the hull and the back! The left side is the view looking back from the tip of the bow (Station 0) to the hull section with the greatest beam (Sect. 7). The right side is the rear view looking forward to Section 8. Common sense says to go to Section 7, but that would violate tradition, causing the Mount of Olympus to topple. The 21-year-old designer drawing these plans would never do that! The old duffer today would duplicate Section 7! These section numbers are shown in the view at the top of the illustration, the starboard view, starting with 0 at the tip of the stem. From now on we shall be using port and starboard a lot. If this throws you, always imagine yourself standing on the deck facing forward (towards the pointy end). The side on your right is starboard. The side on your left is port. Why do they call the left side port? Because "port" has the same number of letters as "left'! Remember, though, left and port have the same number of letters *only* when you are looking forward, which is what any wonderful Polish safety engineer will say is the safe thing to do! (*Also, port, left, and red are all shorter words than starboard, right, and green . . . which takes care of your navigation side lights, too! wcn*)

For the moment, forget the view at the bottom of the lines illustration, which is the keel view of the port side. Returning to the starboard view and the section view, all the lines parallel to the LWL (load waterline) are waterlines. Minus denotes it is a waterline below the LWL. No sign implies plus, so it is a waterline above the LWL.

Now we change things a bit. In the section view the lines vertical to the waterlines are called Buttocks. Buttock 1 is one foot out from the hull center-

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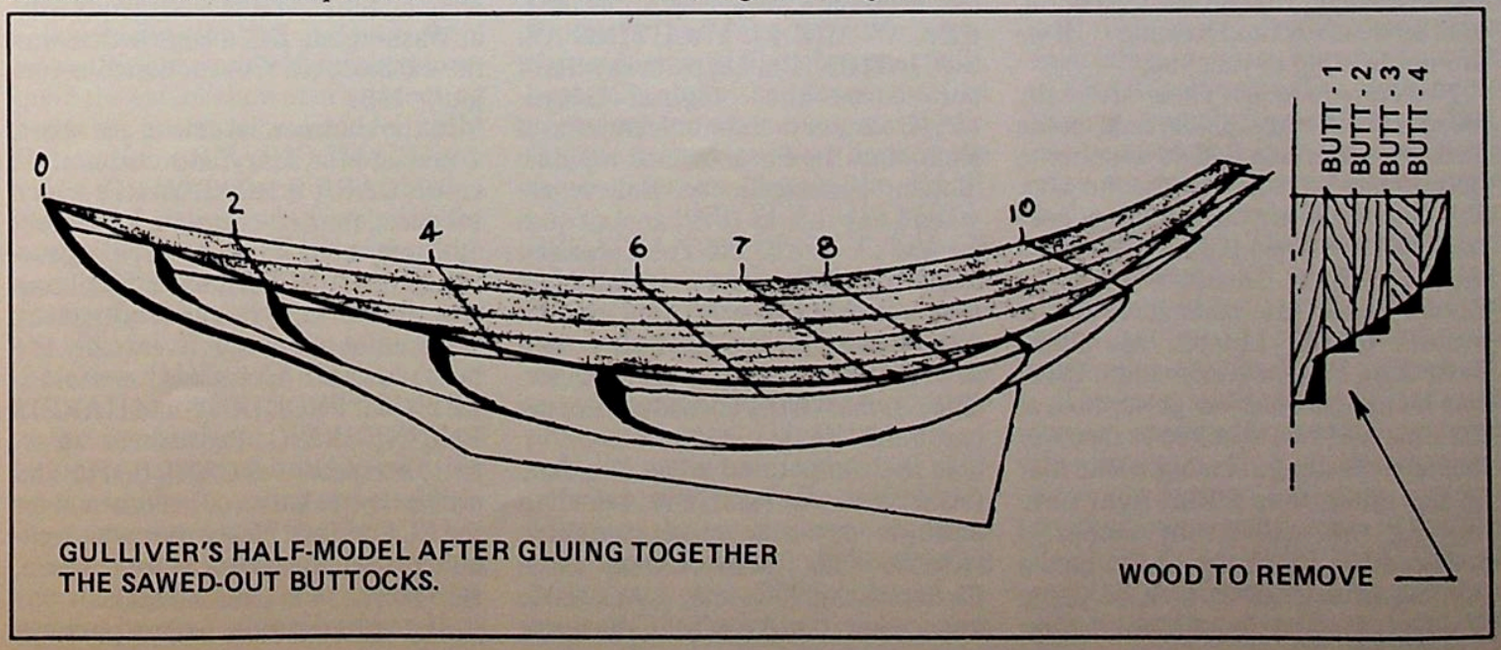

GULLIVER'S HALF-MODEL AFTER GLUING TOGETHER THE SAWED-OUT BUTTOCKS.

Big L-Class boats racing at Pewaukee, Wisconsin, back in 1975. Great action photo taken by Catherine Millican.

STRICTLY SAIL

By ROD CARR

Well, after a brief rest here I am again, pushing the buttons on a computer this time, but having to put down the transmitter and turn my back to the lake. You old timers will remember a column by the same name that ran in *Model Builder* magazine from 1974 to 1979. This new, all-boat magazine, by the same publisher, needed a spokesman for the sailboating contingent so we are off and running . . . if we are not beating or reaching!

Newcomers to the game are really owed a bit of biographical data on the author so they can decide whether to believe him or laugh at what he says. My history in model yachting goes back to 1969 when I almost ran down an East Coast 12-meter sailed by Chuck Black (the sailmaker) in the middle of the Lincoln Memorial Reflecting Pool in Washington, D.C. I was helming a deep-Vee power boat at the time and was shocked to discover that some boats don't make a loud roar on the water, thus a hard right turn, missing the sailboat by inches. I pestered Mr. Black until I obtained a sailboat (it was an early East Coast 12—No. 38) and began looking for more folks to sail with.

Always one to use the U.S. mails, through my correspondence I fell in with a group which was arguing for the organization of R/C model yachtsmen. The existing organization (MYRAA) took a less than active stance in favor of radio control and didn't encourage those of us who saw its potential. The result was the formation of the AMERICAN MODEL YACHTING ASSOCIATION. I'm happy to say that I served as the original Secretary/Treasurer in the administration of Rich Matt the First, banana republic dictator par excellence. Believe me when I say that in 1970, annual dues for AMYA were $2.50! There was a lot of discussion and hand wringing when they were boosted to $3.65. I'm sufficiently proud of my association with the AMYA to have put my membership number on the license plate of my car. . . AMYA 2 . . . it says.

In the competition arena I've done fairly well. At least I've sailed in enough national championships (AMYA calls them Annual Class Championship Regattas. . . ACCRs) to know what it is like to be in the water with the top guns. In the East Coast 12-Meter Class I finished 2nd, in 1971. Service to the STAR 45 Class in the mid-'70s got me to ACCR wins in 1975, '76 and '77. I also managed to win the INTERNATIONAL A-Class ACCR in 1977. In 1974, we journeyed to Canada to sail in the 50/800 ACCR. Sixth place out of 45 boats was no mean feat. So I do have competition experience in both the one-design and formula classes.

But for pure enjoyment and a sense of accomplishment, it is in the local fleet series that I have the fondest memories. Given the option of wearing three chevrons and a year numeral on the sails of my boat, I always choose the three black chevrons and '70 for winning the C. H. Black Trophy Series in Washington, D.C. I believe that was the earliest AMYA-sanctioned series in the U.S.

In the commercial side of the sport, I managed a Maryland corporation called CARR'S BOAT YARD, which produced the first complete East Coast 12-Meter kit in the early 1970's, developed the HERCULES line of sail control units, and began sailmaking services for all classes. Eventually, the boat and winch operations were sold to LEISURE PRODUCTS and HARRIS ENGINEERING. The sailmaking activity was reborn as CARR SAILS and even today makes an occasional suit for the EC/12 Class. I leave the mylar technology to such experts as John Amen, Bob Sterne, and Chuck Black.

Any author writes from a personal

point of view. It is proper to write down what biases I can identify for your use as background. After all, you'd probably not want to try to learn how to gamble from Jimmy Swaggart 'cause he doesn't believe in it.

I give high priority to:

Introducing new people to the sport of model yachting

Assisting beginners in getting boats constructed and on the water

Devoting time to the study of management and administration of local fleets actively promoting one-design sailing as a means of establishing strong, long lived fleets that don't lose as many people each year as they gain

Continually advancing model yachting as a sport that is environmentally compatible, contributes to good health, and that also fits in well with other recreational water uses

Harping that model yachting is first and foremost *FUN*, and only a serious competition sport as a distant second.

A few words about the history of our sport seem proper in this initial article. Model yachts have been pushed about ponds and lakes since organized in the early 1800s. The early boats used a clever means of attaching the mainsheet to the tiller arm. A balance was achieved which allowed the boat to sail a relatively constant angle with the wind. Subsequently, a more sophisticated method of controlling the rudder angle was conceived by a Mr. Braine and many, many boats were built with "Braine Gear" doing the helming duties. Further development resulted in the invention of a mechanism in which the relative wind was sensed by a wind vane on the transom and the rudder controlled by an attached gear train. Many specialized ponds were built in Europe, and a few here in the U.S. to provide sailing sites for what was known as "Vane Sailing."

Popularity climbed, and soon there was sufficient worldwide interest to require the establishment of a governing body, the International Model Yacht Racing Union (IMYRU). IMYRU provided for each country to establish a National Authority which would be the bridge between IMYRU and the skippers in the country. In the United States, the first national authority was the Model Racing Association of America (MYRAA). MYRAA organized itself with the individual club as the standard unit. While individual skippers registered boats to race, the responsibility for voting and establishing rules rested with the clubs.

Vane sailing waxed and waned until the mid-1960s. As radio control apparatus became more reliable and less costly, it was applied to sailboats. Such well-known names as Buddy Black, Dwight Hartman, Matt Jacobson, Tom Protheroe, and John Reynolds began the production of fiberglass boat hulls, boat kits, and the documentation necessary for assembling and outfitting the boats. Here were born (in the same order as above): the EAST COAST 12-METER, OLYMPIA, REGATTA ONE-DESIGN, SANTA BARBARA, and the 6-METER. It is interesting to note that all of these are one-designs, a point that naturally fits my biases, and that results from the use of fiberglass molding processes to produce a series of identical hulls.

The guy who really started it all . . R/C model yacht racing as we know it today, that is . . Tom Protheroe, creator of the Santa Barbara One-Design.

At the same time, individual skippers were applying radio control technology to the entire array of formula class boats that had long been sailed under vane gear. These classes encouraged the design and construction of individual boats to a class measurement rule or a formula.

As all these folks looked for ways to pool their knowledge and learn from each other, inquiries were made of the MYRAA leadership. Yes, radio boats were welcome within MYRAA. But, one realized that individual skippers were not going to have a strong voice in the organization set up as it was for club domination. The thing most common to the early R/Cers was strong individuality of each person. The egos were not small either, and self-motivation could be taken for granted.

The most vocal of the R/Cers were formed into an ad hoc committee under the direction of Ray Hottinger of Colorado Springs, Colorado. Ray was writing a magazine column in RADIO CONTROL MODEL BOATING, a monthly published by John Barboza. Ray formed a natural focus for all the

Jack Elem, Fullerton, CA, launching his Friendship sloop "Nefertiti" back in 1978. Very similar to the version on our "Cap'n's Log" column head.

enthusiasm, and, as his mailbox smoldered with hot letters, he finally took revenge on all his attackers by assigning the nine most pushy as interim officers and directors of the AMERICAN MODEL YACHTING ASSOCIATION. I must have been near the head of his list for he made me Secretary/Treasurer, a move which has kept my mail box stuffed to this very day, it seems.

FIRST AMYA OFFICERS (1970-71)

President	Rich Matt, IL
Sec'y/treas	Rod Carr, MD
QNL Editor	Ray Hottinger, CO
Director	Dennis Eason, Canada
Director	Dick Hein, IL
Director	Bob Suding, CO
Director	Bill McLaughlin, TN
Director	Don Prough, CA
Director	Gordon Wallace, CA

This unruly bunch of rabble constituted what has come to be known as the Chosen 9. (Almost sounds like the Seacaucus 7. . .and didn't they go to jail?) Well, we escaped conviction and went merrily on our way establishing what has turned out to be a very successful organization.

I think this success was because the founders represented a fair cross-section of the newly emerging hobby of R/C sailing. The total expertise was a balance of formula and one-design class experience. It shared a general distaste for administrative and bureaucratic processes and procedures. Today we can see this reflected

AMYA-SANCTIONED CLUBS—Winter 1987

CANADA
Oshawa Model Mariners - Ontario, Reg Whalen, (415) 725-4675
Metro Marine Modelers - Toronto, Robert Pugh, (416) 487-9003
Montreal Model Yacht Club - Pointe Claire, Phil Turgoose (514) 695-9208
Ottawa R/C Yacht Club - Ottawa, Tom Rogers, (613) 646-8668
Upper Canada Model Yacht Club - Toronto, Wolfgang Schulze, (416) 247-9218
Vancouver Model Yacht Club - Vancouver, B.C. Bob Sterne, (604) 299-0767

AUSTRALIA
Canberra Model Yacht Club - Holt, Aust., David Burns, 06-254-9122
South Australia RYS - Fulham, Rick Doorey, 88-353-1920

MALAYSIA
Kuala Lumpur Model Yacht Club - Kuala Lumpur, Sidney Pearce, c/o Racal-Decca

UNITED STATES
AK Arctic Circle Yacht Club - Anchorage, Bill Schoephoester, (907) 279-7275
AL Birmingham Model Yacht Club - Birmingham, Myron Sasser, (205) 956-6843
AL Prattville Model Yacht Club - Prattville, Dane Drasher, (205) 365-0453
AZ Copperstate Model Boat Club - Phoenix, Glen Raub, (602) 277-4278
AZ Tillerman Model Yacht Club - Mesa, Bob Girdley, (602) 985-8393
CA Bay Racing Association - Petaluma, John Amen, (707) 762-9771
CA Canyon Lake Model Yacht Club - Canyon Lake, Andy Bajan, (714) 244-4025
CA Helmsman Model Yacht Club - Van Nuys, Charles Engle, (213) 780 3307
CS Northern Cal S/B Fleet #2 - Oakland, Irvin Blanchard, (415) 836-1467
CA Northern Cal Soling Fleet #2 - Vallejo, Howard Brown, (707) 642-9166
CA Orange County Model Sail Club - Laguna Hills, Pete Kruse, (714) 830-2764
CA Pier 1900 Model Yacht Club - Lakeport, Hans Carmiggelt, (707) 263-4453
CA RC Mariners - Santa Barbara, Ray Kieding, (805) 682-4670
CA Sacramento Model Yacht Club - Fair Oaks, Ernest Morton, (916) 967-5644
CA San Diego Argonauts - San Diego, Bill Sage, (619) 453-5851
CA South Bay Model Yacht Club, San Jose, Bob Eger, (408) 266-6404
CA The Dam Club - Altadena, Andy Littlejohn, (213) 794-0193
CA Victor Valley One-Meter Assn. - Victorville, George Floyd, (619) 245-7545
CO Colorado SPGS Model Boat Club -Colorado Spgs, Ray Hottinger, (303) 598-8105
CO Denver Area Model Yacht Assn. - Denver, Del Lauterback, (303) 934-8960
CT Housatonic Model Yacht Club - W.E. Teghtmeyer, (203) 929-8319
CT Mystic Model Yacht Club - Pawtucket, Robert Weall, (203) 599-1644
DE First State Model Ycht Club - Wilmington, George Bard, (302) 994-8962
FL Golden Triangle Model Yacht Assn. - St. Pete., John Hichman, (813) 327-5834
FL Miami Model Sailing Club - Miami Lakes, Dick Finlay, (305) 823-0330
FL Naples Model Yacht Club - Naples, Peter Bodine, (813) 263-4347
FL North Florida M.Y.C. - Jacksonville, Susan Milligan, (904) 733 9601
FL Orlando R/C Model Yacht Club - Winter Park, George Losey, (305) 647-2128
FL Pensacola Model Yacht Assn. - Pensacola, David Stone, (904) 932-3388
GA Atlanta Model Yacht Club - Atlanta, John Dixon, (404) 252-0008
GA Wing To Wing Model Yacht Club - Peachtree City, Tom Evens, (404) 487-8209
IA Iowa Model Yacht Assn. - Perry, Keith Miller, (515) 465-2306
IL Chicago R/C Model Yacht Club -Park Ridge, Bill Paine, (312) 823-6006

in the one-time vessel registration fee. This is terrific from the standpoint of the skipper, but horrific from the standpoint of the Class Secretary, who has to administer such an unwieldy information base. But, the founders clearly held the well being of the individual to be supreme. By the early 1980s, AMYA'S appeal resulted in the eclipse of MYRAA, and the assignment of AMYA as the IMYRU National Authority for the United States.

Early in AMYA'S life, the Quarterly Newsletter became the focus of its efforts. A large proportion of the members were individual skippers and the AMYA QNL was the only reliable and continuing source of information about R/C model yachting. Both quality and quantity have steadily increased up to the present time. Gene Dunham, the current QNL Editor, has produced a recent series of technically oriented articles which are unmatched anywhere in the modeling press. The annual AMYA dues of $20 are a small price for 240+ pages of model yachting news, delivered to your door over the course of a year.

Control of the affairs of AMYA and of its boat Classes were left strictly in the hands of the membership. All members vote on AMYA business. Class members vote on issues arising from within their own class. All the information required is contained within the pages of the QNL. Active skippers are part of the process whether they live alone up an Alaskan river, or can see the San Diego Club's pond and are one of its 100+ members. The system has worked well for over 17 years, though not without the usual amount of controversy and debate which accompanies searches for consensus.

AMYA encourages sanctioned Clubs as a means of promoting the sport on a local level. Only three (3) AMYA members are required to charter a sanctioned club. One of those members becomes the Club Contact Person, and his name and address are published each year in the QNL. Each year the club must hold at least one regatta that is open to skippers from outside the club. The date is published in the AMYA Regatta Schedule. No money passes from the club to AMYA. If the local club charges dues, that money is for local use. So while there are AMYA Clubs, they exist as a convenience for the local sailing that makes up the vast majority of events throughout the season.

Bone IV, a 50/800-class boat. Cat-rigged, canard rudder, rotating mast, and mast turtle. Keel at location of hull stripes. Design by Karl Kirkman.

The founders even went so far as to provide an OPEN Class. Here are found boats of every size and description: scale, one-of-a-kind and so on. A new design which hopes to obtain its own class status will be registered in the OPEN Class until there are 20 boats of that variety, and then the class is free to organize, elect its own class secretary, establish its own class rules and conduct its own Championship regattas and other affairs.

Competition, racing radio controlled sail boats, is the bottom line. Racing starts at the local level. Most clubs have local series racing. Much of it goes unpublished in the Regatta Schedule. A call to the club contact man will usually confirm that traveling salesmen are welcome at lake side, and I've often been able to borrow a boat from a local skipper who was unable to attend. More racing occurs at the local fleet level than on any other across the country.

Next on the list are what are called GREEN CHEVRON events. These are special one or two-day regattas

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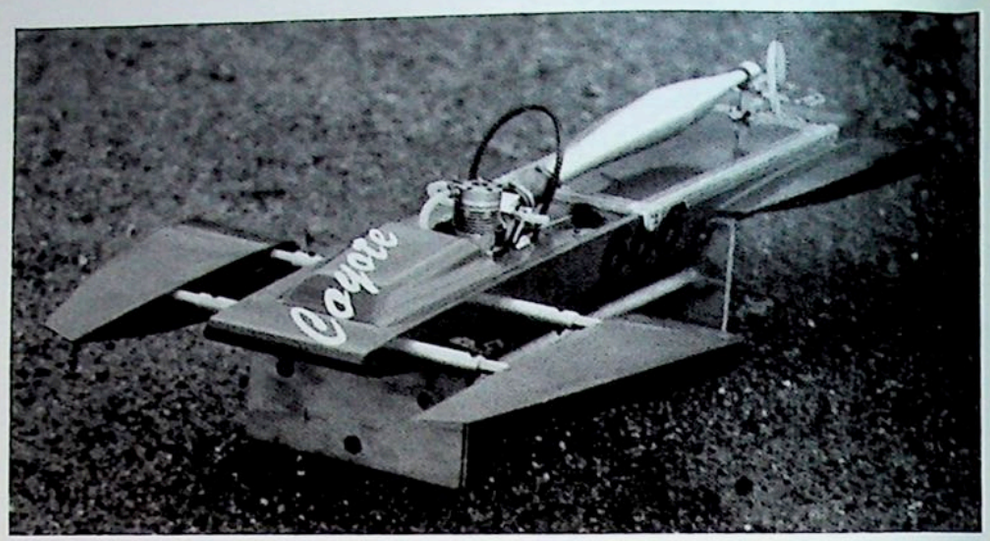
IL North Shore Model Boaters - Antioch, George Kellogg, (312) 395-1980
IN Indy Model Yacht Club - Indianapolis, Tug Wilson, (317) 849-4308
IN N'West Indiana Model Yacht Club - Valparaiso, Don Schneider, (219) 462-8275
KS Midwest Model Yacht Assn. - Ottawa, Joel Nordeen, (913) 242-1239
KY Bluegrass Open Yacht Club - Louisville, Ed Tasman, (502) 363-0029
LA Greater New Orleans Model Sail. Club - Metairie, O. Williams, (504) 635-3741
LA Gulf Coast Model Yacht Assn. - Slidell, R.L. Richardson, (504) 641-0816
MA Marblehead Model Yacht Club - Marblehead, Gene Thober, (617) 631-0797
MA Minuteman Model Yacht Club - Needham, John Sulivan, (617) 444-6166
MA Springfield Model Yacht Club - Springlield, George Brown, (413) 788-4669
MD R/C Skippers ASSN of Baltimore - Towson, Jim Macneal, Jr., (301) 296-4296
MD Solomons Island Model Boat Club - Solomons, Leroy Langley, (301) 326-3719
MI Detroit R/C M.Y.C. - Bloomfield Hills, Charles Scales, (313) 642-3811
MI Michigan Model Sailing Club - Saginaw, Wayne Westendorf (517) 793-8025
MI Sail Club "54" - Jackson, Ernest Beffel, (517) 782-3715
MI West Michigan Model Yacht Assn. - Rockford, Chuck Haling, (616) 866-1065
NC Piedmont Model Yacht Club - Burlington, Harry Studstill, (919) 584-5346
NH Laconia Model Yacht Club - Center Sandwich, William Visser (603) 284-6497
NJ Brant Beach R/C Club - Medford, T.W. Coe, (609) 654-0005
NJ Mini-America's Cup Association - Montyville, Richard Palmer, (201) 335-1111
NV Reno Model Boaters - Sparks, John Hanks, III, (702) 673-3863
NY Albany Model Yacht Club - Albany, Larry Grant, (518) 489-4990
NY Buffalo Model Power Boat Club - Amherst, Jim Lankes, (716) 833-6402
NY Central Park Model Yacht Club - NYC, Madeline Tucker, (212) 874-0656
NY Heckscher Model Yacht Club - Cold Spring HRBR, David Joerger, (516) 488-3880
NY Island Model Yacht Club - Westbury, William Moll, (516) 334-5276
NY Mid-Hudson R/C Society MYC - Poughkeepsie, Henry Pletcher, (914) 454-5797
NY Mill Pond M.Y.C. - Port Washington, Edward Helmle, Jr., (516) 883-8453
NY Rochester Model Boat Club - Rochester, Bill Head, (716) 247-2167
OH Cleveland Model Boat Club - Middleburg Hts., Albert Zier, (216) 676-0804
OH Miami Valley Model Yacht Assn. - Dayton, Donald Peacock, (513) 845-9568
OH Sailboat Racers of Central Ohio - Columbus, Rich Ritchison, (614) 261-7624
OR Oregon Model Yacht Club - Portland, John Oettinger, (503) 646-8668
PA Mid-Atlantic Model Yacht Club - Glenolden, John Krick, (215) 461-5530
PA White Rose Model Yacht ASSN. - Middletown, Robert Eames, (717) 944-2657
PR Puerto Rico Silent Modelers - Los Frailes, Peter Mareno, (809) 721-0189
RI Narragansett Model Yacht ASSN. - Pawtucket, Michael Andrea, (401) 724-5221
SC Charleston Model Yacht Club - Charleston, William Coates, (803) 762-0624
SC Hilton Head Model Yacht Club - Hilton Head, Ron Martin, (803) 671-5485
TN Music City Model Yacht Club - Brentwood, John Workman, (615) 833-9114
TX Alamo Area Model Yacht Club - San Antonio, Jim Humphries, (512) 494-0112
TX Olympic Model Yacht Club - Sugarland, Ted Cooper, (713) 491-7397
VA Lanier Model Yacht Club - Martinsville, George Sawyer, (703) 632-3777
WA Gig Harbor Model Yacht Club - Gig Harbor, Ron Moblo, (206) 851-2489
WA Greater Seattle Model Yacht Club - Bellevue, Jim Morin, (206) 454-2654
WI Badger Model Boaters - Racine, Gary Randall, (414) 886-5295
WI Racine R/C Model Yacht Club - Racine, Ken Luedtke, (414) 554-8592.

PINCKERT 21 COYOTE "RIGGER"

By DOUG TWAITS . . .



Combine this fiberglass/wood outrigger and your favorite 21 marine racing engine and you will have the potential to win at any race, anywhere!

Let's start off by saying the Coyote family of boats has a good past history of winning model boat races, nationally and locally. These fine hulls are made by Don Pinckert, of Pinckert Custom Boats.

This writer had the pleasure of seeing one of NAMBA'S junior members win A Hydro at the National event at Reno in 1985. This junior competitor won the class with his K&B 3.5 powered 21 Coyote. This hull also turned in the fastest time for the class.

This product review hull is from one of the newest kits available, as it's sponsons are made of pre-molded fiberglass and the center fuselage is wood. Don must be using a new type of wood, as the weight seems much lighter than past Coyotes. When ordering Coyotes, running packages are available. If one's own running gear is used, try to mount gear per instructions. This is the key to a great running hull, as many hours have been spent to find what works and what doesn't.

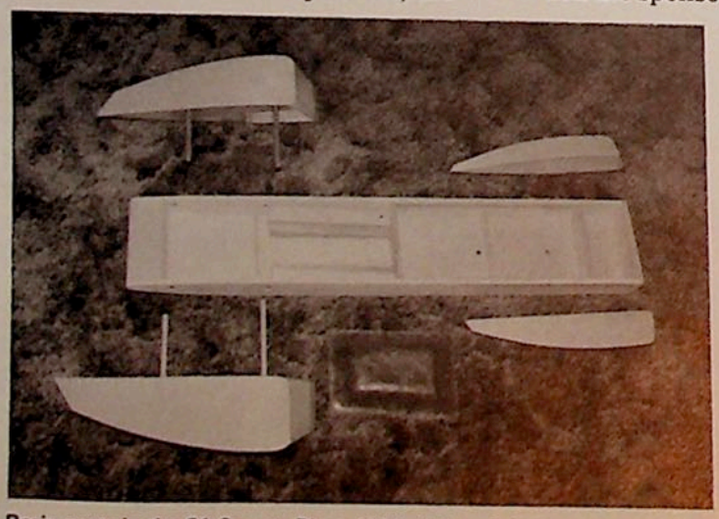
CONSTRUCTION

The first step in construction is to glue the booms into the side of the front sponsons. Glue in the nose block, transom plate, and motor mounts per instructions. A long-setting quality epoxy should be used, as strength is of the utmost importance. When installing the aluminum booms in the sponsons, use a drill to make recesses or a file to make slots for the epoxy to settle in. This will keep them anchored permanently. This writer anchored the hull booms with long sheetmetal screws. The front boom holes were drilled on an angle into the front bulkhead. The back boom holes were drilled on an angle into the balsa part of the mount. Remember, add some epoxy to the holes before putting in the screws. The screws will break loose if they need to be removed. The new mount setup is particularly nice because you can use a little lighter motor mount. This setup also strengthens the motor compartment for less flexing. At this point, I held my motor plate on with 10-32 bolts and let the holes go all the way through the bottom of the hull. Instead of using lock nuts, you can tap the mountplate, or use both.

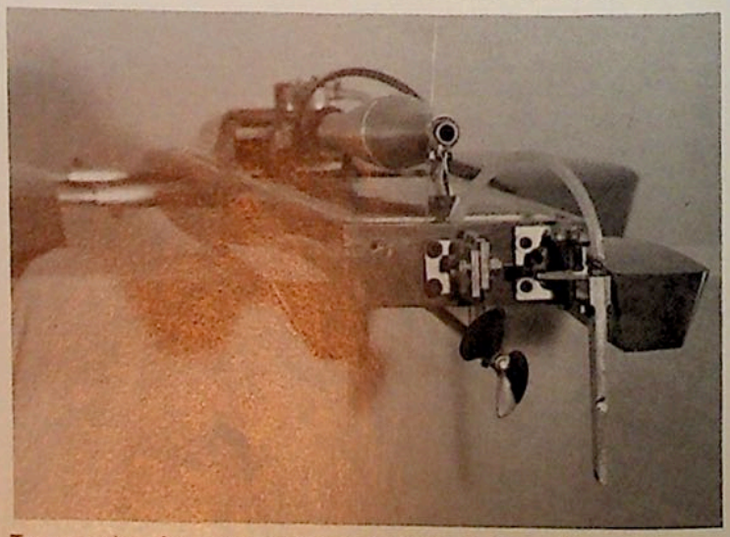
At this point, we are using an eight-ounce Sullivan slant front tank, the soft type. With a soft tank, you can collapse it a little here and there so you can use a cowl. We used a half-cowl for lightness. This and a full cowl are available from Don. Remember, put the pickup in the left lower back corner! That's where the fuel accumulates when you are racing.

When the sponsons are mounted, be sure to measure them per instructions. At this point, mount your favorite engine. The most important job of all is the mounting of the strut and the measurements involved. There is no offset and motor alignment is also critical. This writer uses a piece of 3/16 shaft about 3-1/2 inches long and puts it into the collet of the engine. This acts as an alignment tool to make sure the brass stuffing box is straight. Most hobby shops have brass tubing that is long enough. I use only brass tubing and have found this to work excellently with a standard 3/16 flex drive. A Marine Specialties strut was used and I slightly drilled the nose so the brass tube could go in about 3/16 of an inch. This keeps the brass tube sturdy under the hull. When installing the flex drive permanently, leave at least 1/16 of an inch gap between the back of the strut and the front of the drive dog. A thrust washer is not needed.

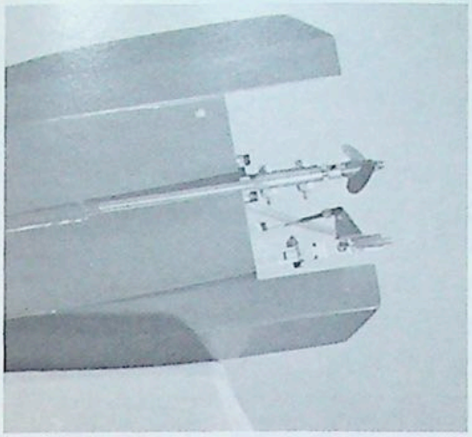
When installing the back sponsons, I drew a line around the sponson on the side of the hull. This enabled me to glue the sponson on in the proper location. I used 5-minute epoxy so I could hold the sponson while the epoxy set. At this point, I made a change per phone conversation with Don. He said to move the



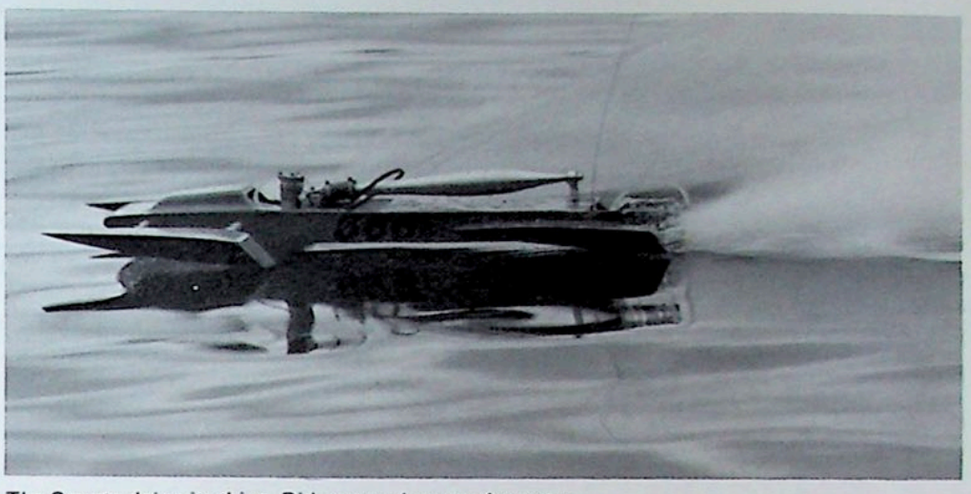
Basic parts in the 21 Coyote Phase II kit. A lot of the building has been done by Pinckert.



Transom view shows centered prop shaft and offset rudder position.



Design modification specified by Pinckert. Involves moving rear sponsons two inches aft of original position.



The Coyote doing its thing. Rides very clean on the water.

back sponsons further back than the instructions stated, using the same depth. The additional distance was two inches.

When installing the rudder, I used a Marine Specialties 40 wedge blade and a homemade bracket. This allowed me to keep the rudder far to the right and yet clear the sponson when right rudder is given. The rudder pin center line is 1-15/16 from the transom. Using a drill press, I put a hole in the back of the rudder for a water pickup. The hole in the side of the blade was 2-7/8 inches from the top. The fitting for the water line is any engine water fitting drilled out slightly (OPS, K&B). When running the water line through the hull, use short pieces of brass through the bulkheads. Put a piece of water line between them inside the radio compartment. This keeps the brass from cracking loose under flexing while running.

At this point, we are ready for the radio box, and any good bellows seal, or your favorite seal, will work. When mounting servos, use flat plastic mounts if possible. They make a neat installation and they are easily removed. Any waterproof heavy duty servo will power the rudder. I used a Futaba S-27 on the rudder and one of the new micro servos on the throttle. I tried to keep the boat as light as possible. The battery is the 250 mah size, and has plenty of whack.

Push rods are 2-56 size and they should not have any bends, especially the rudder. Under load, a rod acts like an accordian and a spongy rudder results. You should have a solder link on the rod at the servo end and a metal quick link at the engine and rudder ends. This way all adjustments are out where you can get at them. Do not use two threaded quick links on the same rod, as it might spin under vibration.

As the radio lid is held on with tape, I charge the battery with the lid removed. I widened the surface of the back and front bulkhead so the tape had a lot of gripping power. I used a piece of 1/8 spruce. I used 1/8 sq. balsa for the lid rails so the boat could be kept light. There isn't any stress from the lid, so they should work well.

The tuned pipe bracket was bolted to the bulkhead for its greater strength. I didn't think it would be wise on a taped lid.

When it was time for coating and painting the boat, I used 3-hour Hobbypoxy to coat the inside of the engine, tank, and back compartment. All holes and surfaces must be coated, if not, water will get in, and under your paint job. I did these compartments twice to really get them sealed. Heating the epoxy can help the brushing. Remove your running gear and use your favorite painting technique.

One important note is that all set screws on the drive and rudder should be flat spotted and treated with Super Loctite.

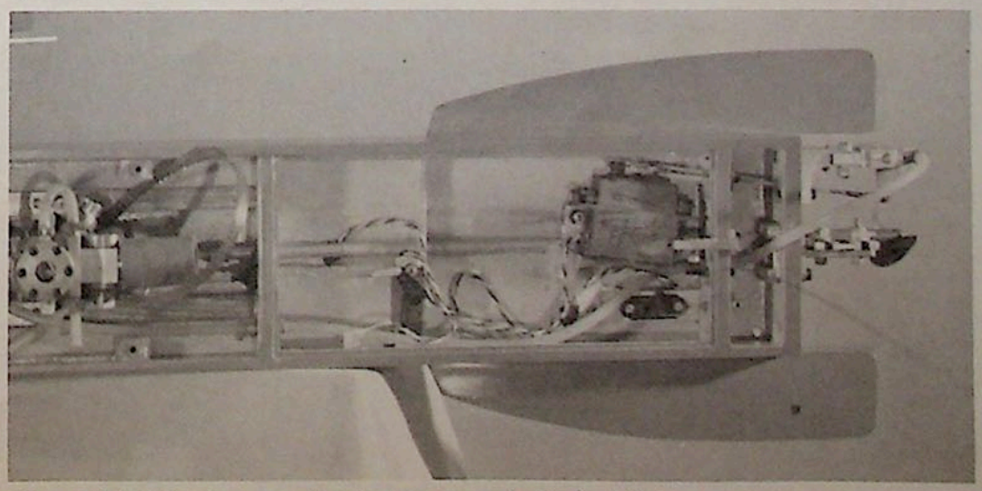
ENGINE

This author used K & B 3.5 marine racing engines and a few different good 40 size pipes. This particular hull is using a Picco 40 high nitro pipe. OPS 40 high nitro pipes also work well. These K&B 3.5 engines have been good to me as they helped me win many district point championships, plus a 1984 National win. Service is another strong point of K&B. Mounting this engine takes 4-40 Allen cap bolts. These bolts thread into the tapped engine mount. Remember, Locktite is a must! This author Loctites everything but the headbolts and the cable collet. I also use a good brand of water cooled exhaust throttle. Pipe couplers last pretty much indefinitely and throttle response is great. A starting pipelength of 9-1/2 inches will pretty much get you going without problems. This length will give you good torque and a broad needle range. To measure, go from the center of the glow plug to the wide part of the pipe. Usually, the pipe has a weld around it at that point. If the pipe has a flat section in the middle, then measure to the center of the flat area. Tuning can go from this point by shortening up for more RPM and speed. A good brand 35% nitro fuel will do a fine job and get you going without fuel problems. Higher nitro fuels can be used for that extra performance you might want.

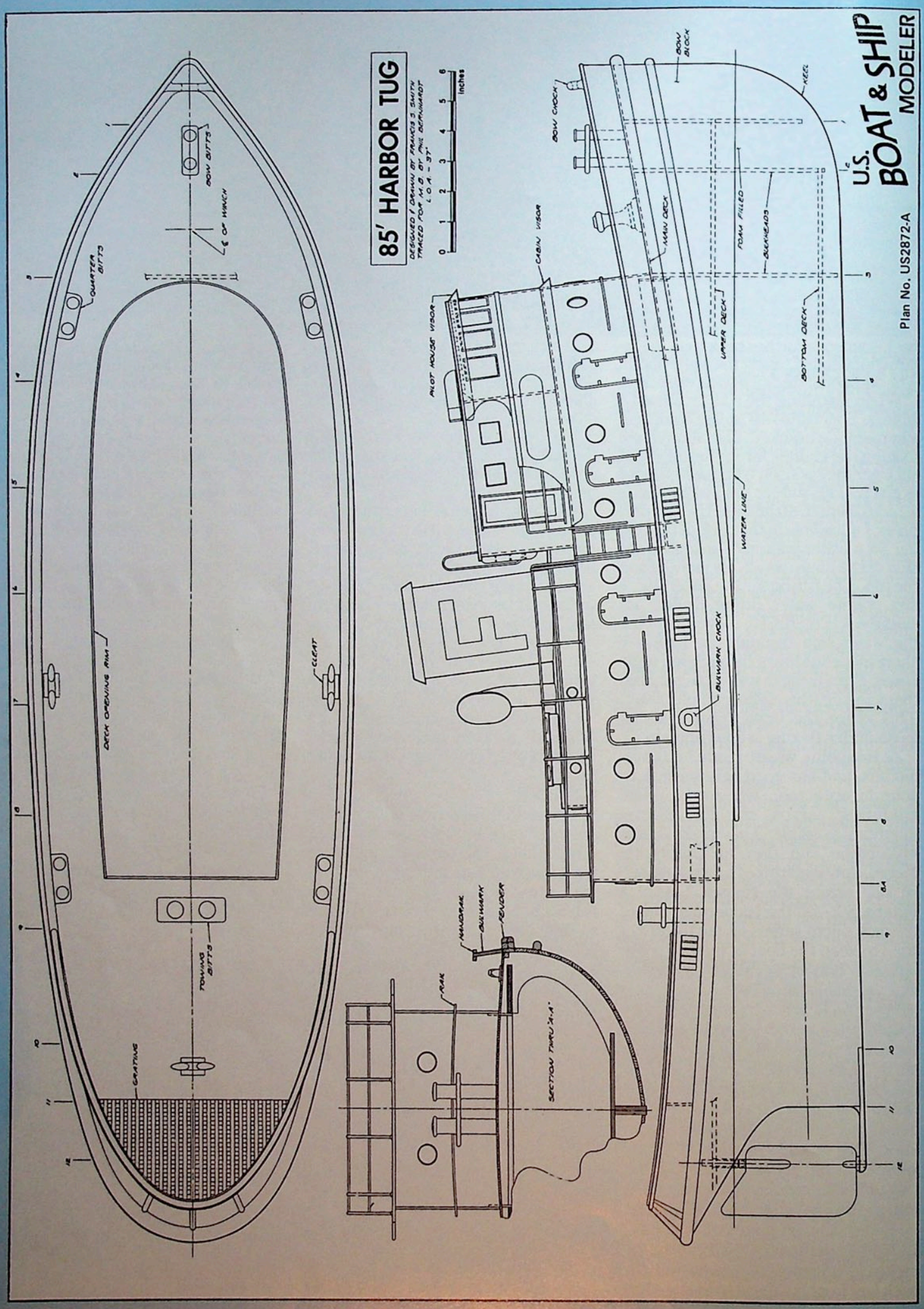
AT THE POND

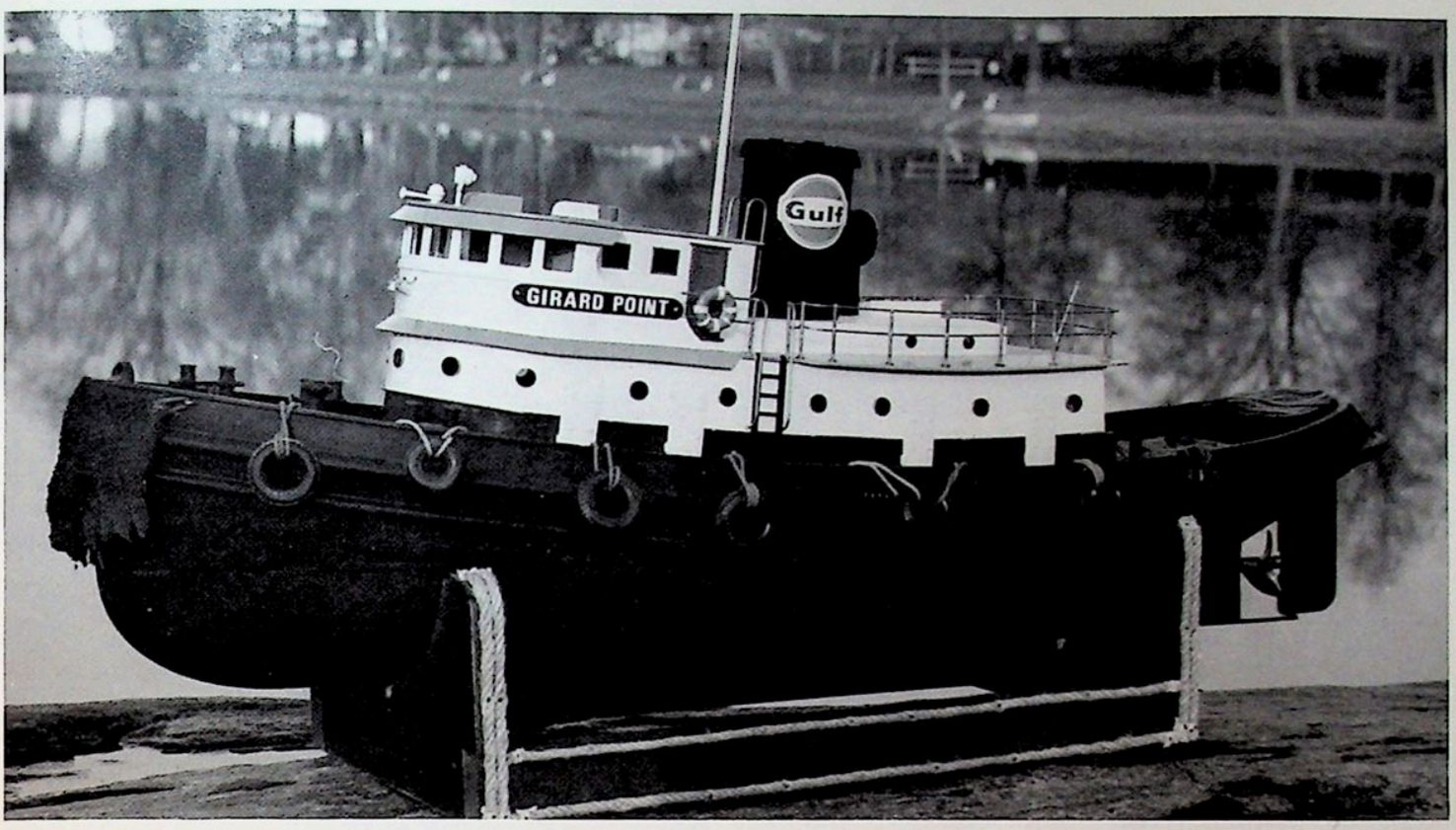
When my son and I were ready to run the boat, it was about the middle of February. The lake was covered with

Continued on page 74



Pipe and deck/hatch removed to show engine and radio installation.


85' HARBOR TUG
DESIGNED & DRAWN BY FRANCIS J. SMITH
TRACED FOR H. D. BY PAUL BERNHARDT
L.O.A. - 37'
0 1 2 3 4 5 6
Inches
U.S. BOAT & SHIP MODELER
Plan No. US2872-A
BOW BITTS
℄ OF WINCH
QUARTER BITTS
DECK OPENING RIM
CLEAT
TOWING BITTS
GRATING
BOW CHOCK
BOW BLOCK
KEEL
CABIN VISOR
MAIN DECK
FOAM FILLED
BULKHEADS
PILOT HOUSE VISOR
UPPER DECK
BOTTOM DECK
WATER LINE
BULWARK CHOCK
HANDRAIL
BULWARK
FENDER
RAIL
SECTION THRU 'A-A'



85 FT. HARBOR TUG

By FRANCIS SMITH . . . Always a favorite subject among scale boat builders, this particular tug's design employs a clever and inexpensive all-wood hull. Includes details on bow thruster and retrieval system.

I've been a modeler since boyhood and my interest have been many. In recent years my pleasure has been to build electric and glow engine powered boats.

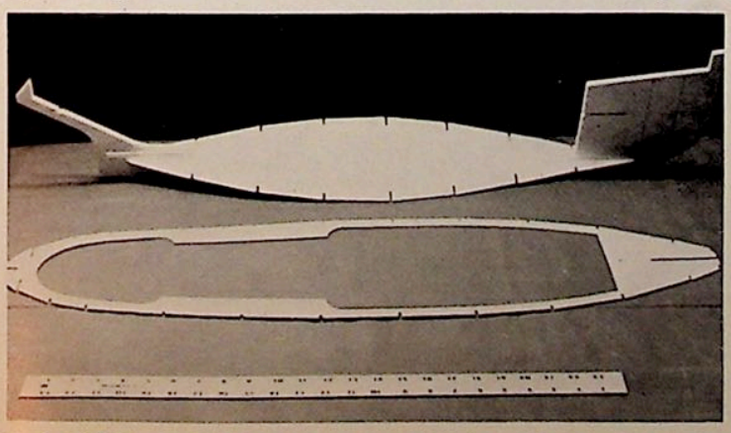
The 85 foot Harbor Tug appealed to me and the desire was to make it so others could duplicate it. This tug was originally designed by the Army for World War II and later sold to private concerns for use in harbors and rivers throughout the country.

I decided to make the model three feet long to allow enough room for any operating features I would want to install, and yet not make it cumbersome and difficult to transport.

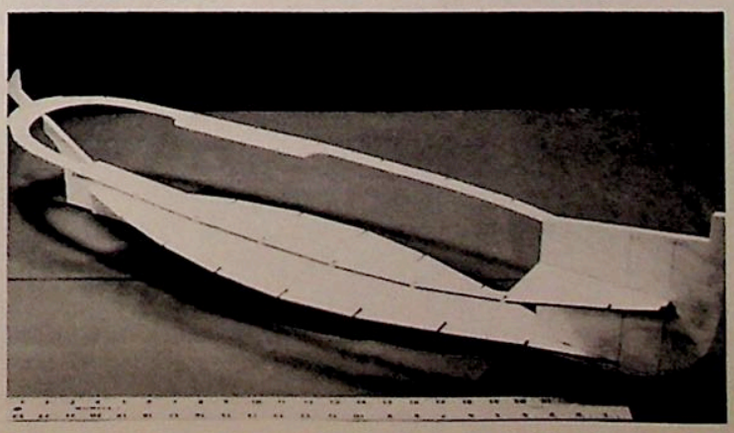
Wood was chosen as the construction material, because to me it is easy to work with, and is clean and familiar to most modelers.

Before construction began, I purchased a set of line drawings, and developed a complete set of plans including assembly details and templates. The templates were attached to the appropriate pieces of wood with rubber cement and the pieces were cut out on a jig saw. This resulted in what was basically a tug boat kit (very few available today.)

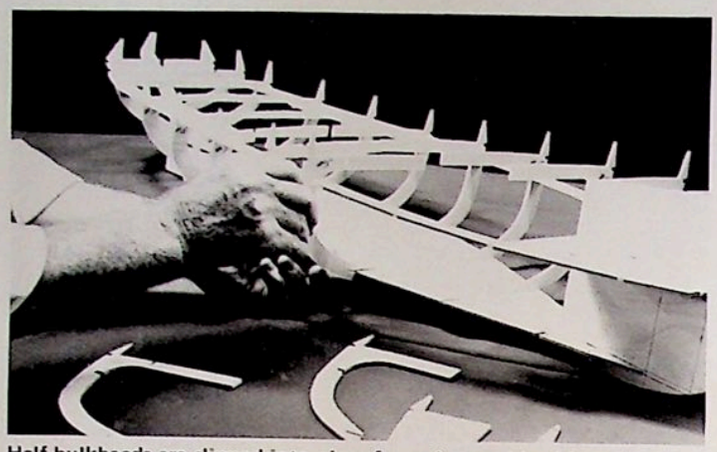
After cutting out the hull parts (keel, main deck, upper deck, bottom deck, bulkheads, and bulwark), I dry-fitted all the pieces to be sure all was well before gluing. Being satisfied, I tack-cemented the entire hull, with the exception of the main deck, with 5-minute epoxy and then completed the gluing with regular epoxy. (Editor's note: This article was originally written and published prior to the common availability of cyanoacrylate glues. Their use is certainly logical in many areas of this construction project. wcn)



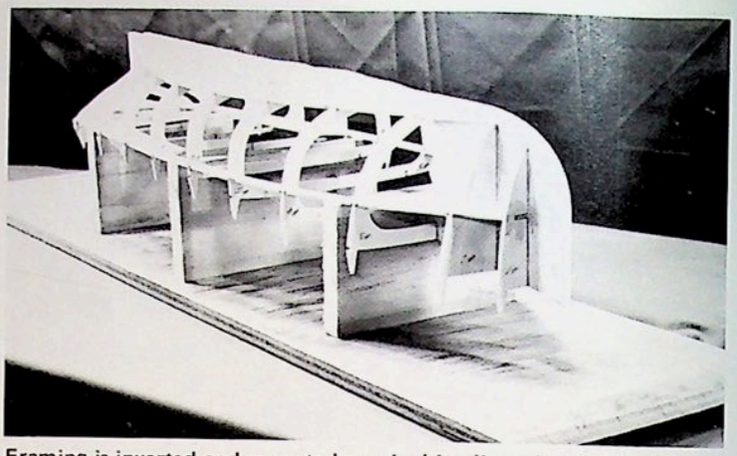
Keel, with lower deck in place, and upper deck ready to slip into notches. No gluing until checked out in a dry fit.



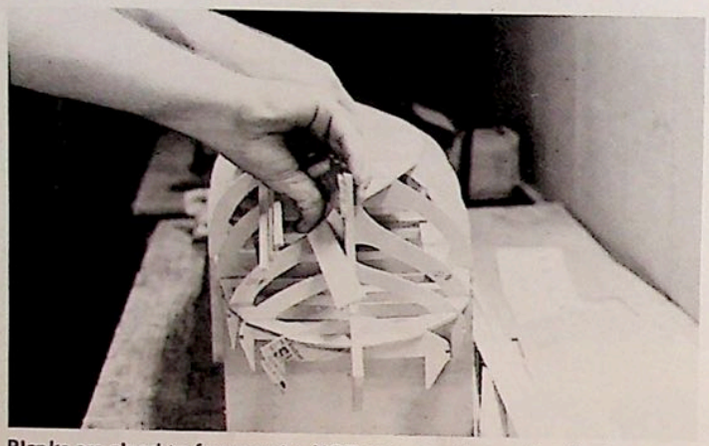
Extra-long notches at bow permit slipping upper deck in place without springing parts. Half-bulkheads can now be added.



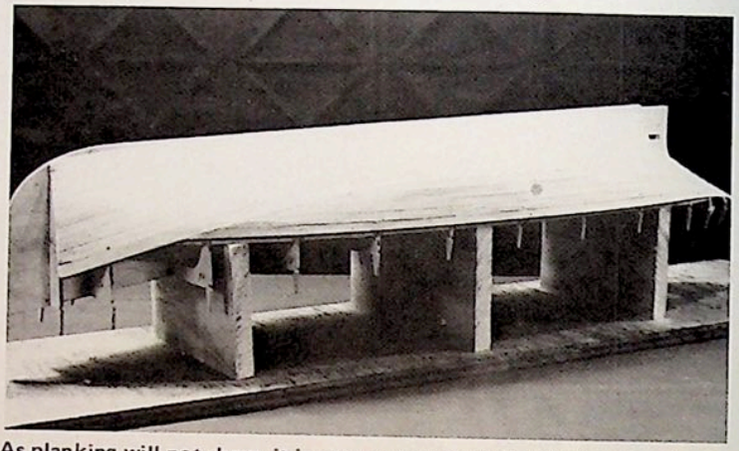
Half-bulkheads are slipped into place from the outside. After checking alignment, everything can be glued.



Framing is inverted and mounted on planking jig, using small brads. This prevents distortion of frame during planking operation.



Planks are glued to frame only, NOT to each other, using 5-minute epoxy or CA glue.



As planking will not show, it is unnecessary to tediously taper each plank before it is glued in place.

I then attached the hull to a planking jig (see sketch and photos) with small brads and planked the hull as far as the jig would permit with 1/8 x 3/8 x 36 balsa strips, gluing *only to the bulkheads* with 5-minute epoxy or CA glue.

After removal from the jig, the planking was continued to the top of the sheer strip, which is 1/8 x 1/8 x 36 spruce. I then glued on the bow blocks and stern blocks and sanded them to shape while sanding the hull lightly.

The complete exterior of the hull was covered with one-inch strips of masking tape, after which I coated the entire interior of the hull with Hobbypoxy Formula 11 epoxy, giving it a generous filling and working in the medium with a stiff brush.

When this interior coat of epoxy cured, I removed the masking tape and sanded the hull to its final shape. The hull was then completely coated with Sig's Epoxolite (exterior only), which filled the dents, cracks, seams and grain, and then it was sanded smooth.

I poured in some Sig two-part expanding foam between bulkheads 1 and 2 and then attached the deck in place.

Next I put on the bulwark sections, fenders, spray rail and handrail. I then laid out the freeing ports and cut them out with a coping saw. The bars were made from 1/16-inch dowels.

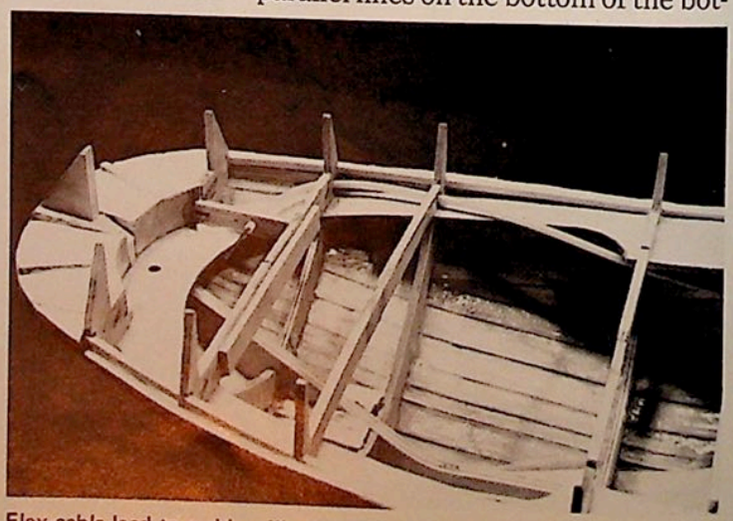
After cementing the cabin rims to the main deck, the hull was set aside and construction started on the Main Cabin.

STEP-BY-STEP CONSTRUCTION

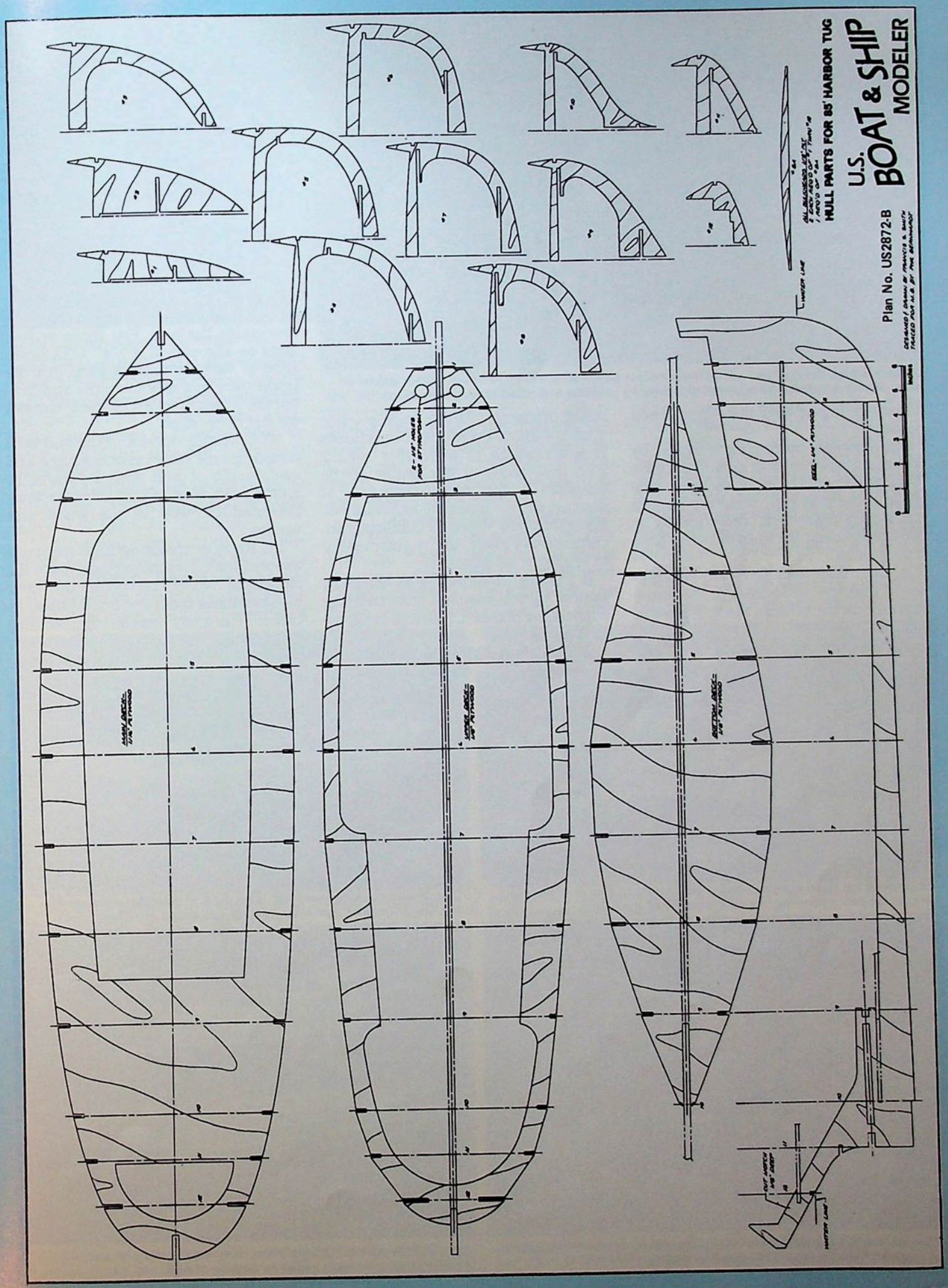
1. Make keel from 1/4-inch plywood. Be sure to notch bow to identify water line and cut slot for stuffing box tube.

2. The bottom deck is made from 1/8-inch plywood. Draw a center line on top of the bottom deck and two parallel lines on the bottom of the bot-

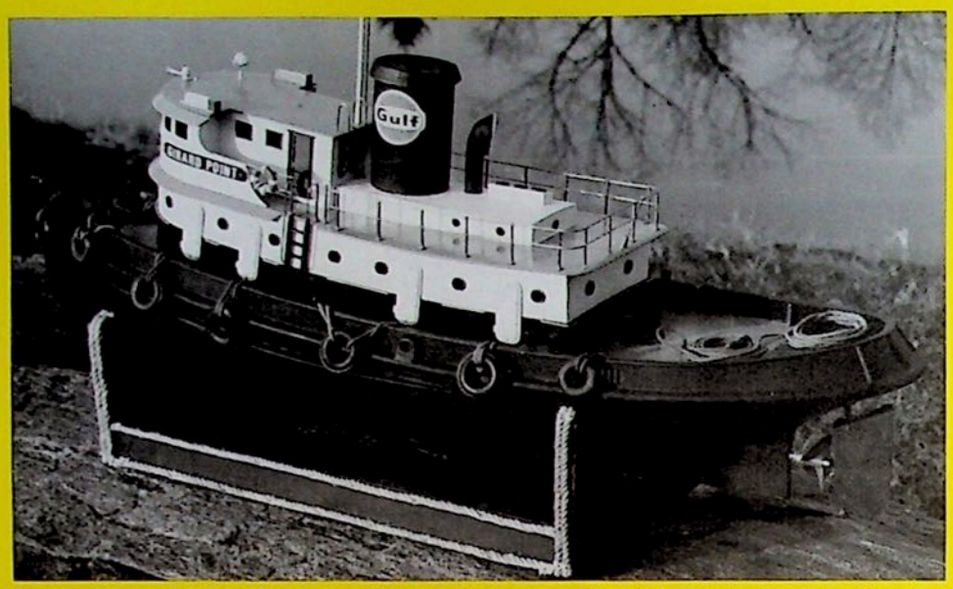
After saturating interior of planking with epoxy, the exterior is rough sanded and then a coat of Sig Epoxilite is spread on.



Flex-cable lead to rudder tiller is added before main deck is installed. Bulwark will be epoxied to extension of bulkheads.



FULL SIZE PLANS & PATTERNS AVAILABLE – SEE PAGE 78



Completed tug is large, but not so much that it becomes awkward to handle. Great model to have around for scale-like retrieval of becalmed sailboats or broken down power boats.

tom deck in line with the edges of end slots.

3. Assemble bottom deck to keel by inserting bow end into keel all the way. This will allow the stern section to engage in the rear slot. Slide the bottom deck fully rearward. Nail with 1/4 or 3/8 brads, using the lines drawn in Step 2 as guides.

4. Cut upper deck from 1/8-inch plywood and install in keel in the same manner as the bottom deck. Epoxy in place.

5. All bulkheads are made of 1/8 plywood. After test fitting, tack in place with 5-minute epoxy. Join bulkheads Nos. 4 through 11 with 1/8 x 1/4 x 2 inch long balsa at the center of the bulkheads for reinforcement, if desired. *Do not assemble bulkhead No. 8A at this time.* When all bulkheads are cemented in place, use regular epoxy to reinforce all joints.

6. Make a planking jig as shown in sketch. Jig will keep hull from twisting while being planked. Nail hull to jig, using short brads.

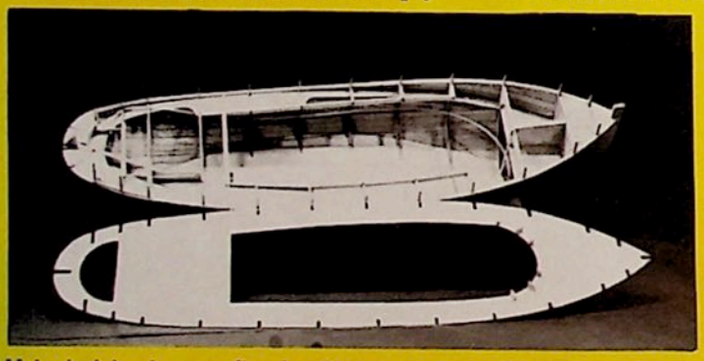
7. Plank hull with 1/8 inch thick x 36 inch balsa, using assorted widths of 3/16, 1/4 and 3/8 inches. Approximately 540 square inches of planking will be required, or 15 x 36. It is only necessary to glue the planking to the bulkheads instead of gluing along the entire length of each strip. Bulkheads No. 1 and No. 2 at the bottom will require slight beveling to remove sharp corner, as will Nos. 11 and 12. Plank hull as far as possible while on jig, then remove hull from jig.

8. Install 1/8 x 1/8 x 36 spruce shear strip in slots near top of hull and complete planking to this strip. *Light* sanding of hull can be done at this time.

9. Epoxy a piece of 1/8 x 3/4 x 2 plywood on each side of the stuffing box slot inside the hull. File three or four slots on the end of a 1/4" O.D. brass tube to make a cutting tool. Put the brass tube in a electric drill and drill out the wood plugs to complete the slot for the drive shaft.

10. Cover the outside of the hull with masking tape to prevent seepage and coat inside of hull with Formula 11 Hobbypoxy, using a stiff brush to work the medium well in the wood and seams.

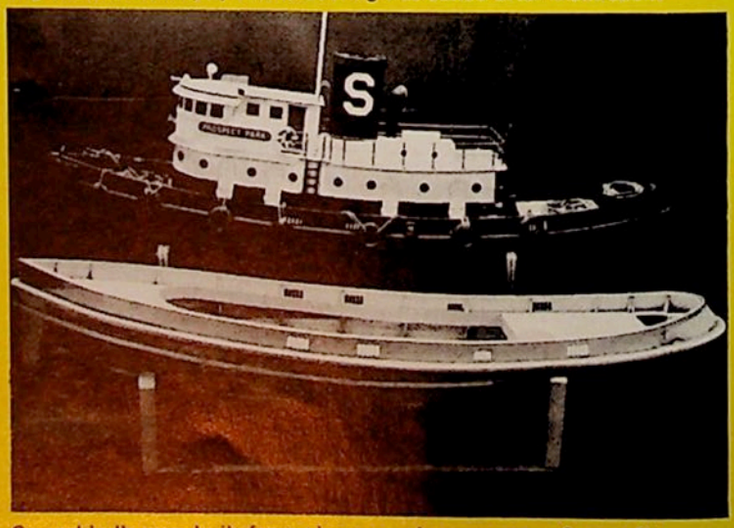
11. Remove masking tape from exterior of hull. Trim planking flush with Bulkhead No. 1 and glue the bow blocks (made from 2 x 2 x 6 balsa) in place. Trim away interfering planking at Bulkhead No. 12 and insert stern blocks in place after cutting to shape



Main deck has been prefitted and is now ready to glue in place. Note braces for cabin opening rim on underside of main deck.

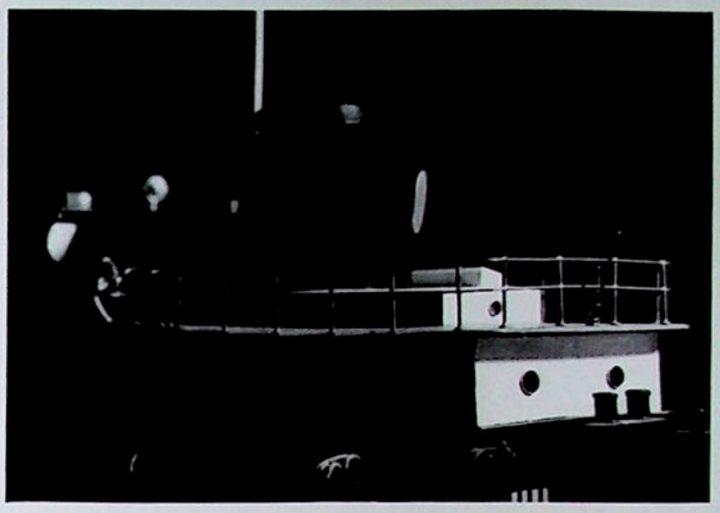
Clamps and masking tape hold main deck in place for accurate gluing. On this model, Epoxilite coating was added after main deck.

Bulwark has been added. Now a strip of balsa or spruce is clamped in place to build up top for support of railing.



Several hulls were built from plans, assuring accuracy of parts fit. Fender strips have been added to outside of hull.

Dimly lit close-up photo of cabin details.



Another detail photo of cabin, looking forward.

from 5/8-inch thick balsa. (Laminate to make 5/8 inch thick by gluing five 1/8 inch thick layers of 2-inch wide balsa together.) From 1/8 scrap planking, make four shims 1-1/4 inches long, to taper 3/32 at the large end, and glue to stern block.

12. At this time, fill between Bulkheads 1 and 2 with two-part expanding foam, if desired, for flotation.

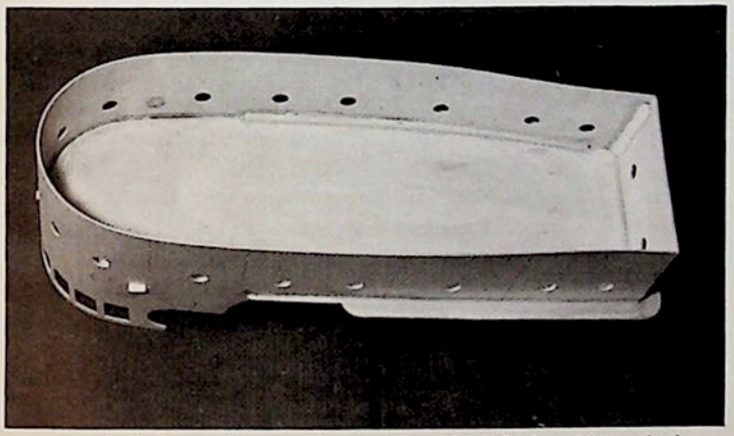
13. Cut main deck from 1/16 plywood, test fit to hull and trim slots where necessary. Attach six pieces of 1/8 x 3/8 scrap planking to the underside of the main deck at the curve of the cabin opening, flush with the edge. These are back-up blocks for attaching the cabin opening rim. Coat the entire underside of the main deck with Hobbypoxy Formula 11 and install to hull using tape, clamps, and weights to insure contact with the tops of bulkheads. Insert Bulkhead No. 8A flush with rear of cabin opening.

14. Cut away the exposed Bulkheads Nos. 4, 5, 6, 7 and 8 flush with the cabin opening. Glue back-up strips made from scrap 1/8 x 3/8 planking between these bulkheads for attaching the cabin opening rim. Then cut cabin opening rim from 1/16 plywood and install, keeping top edge approximately 3/8 inch above top of main deck.

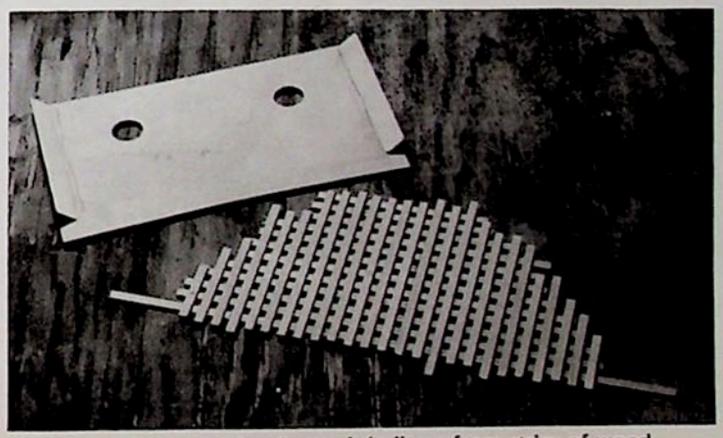
15. Coat the entire outside of hull with Epoxolite, and sand smooth.

16. Draw the water line, using the notch cut in the keel at the bow and the intersection of Bulkhead No. 12. (Drill a 1/16 inch diameter pilot hole down through the center of Bulkhead No. 12 to locate water line at the stern. This will serve as the center line for the rudder post as well.)

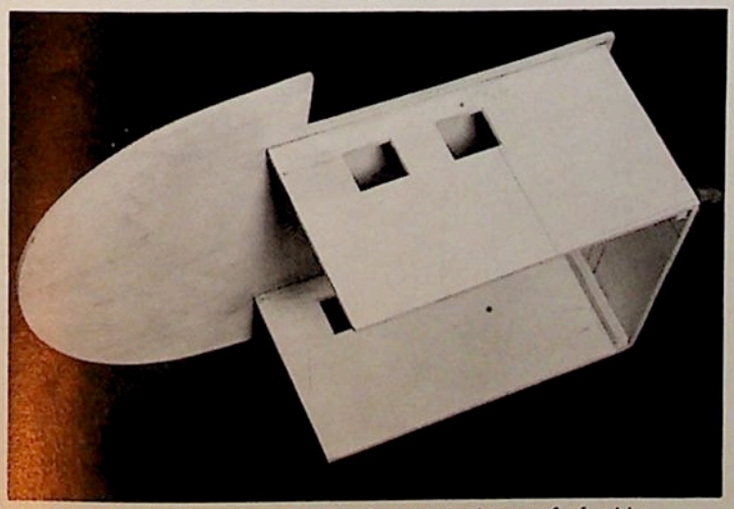
17. Cut four bulwark strips from 1/16 plywood. Attach one piece to each up-



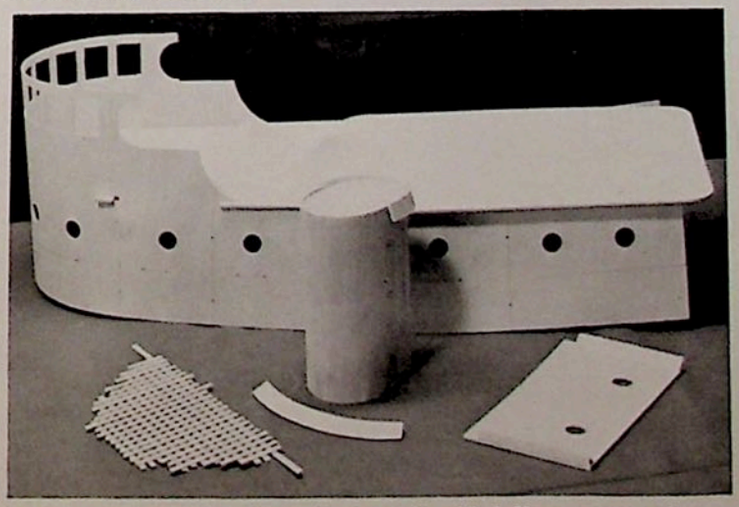
Lower cabin is formed from a single sheet of 1/16 ply with vertical grain (May still be available from Sig Mfg.).



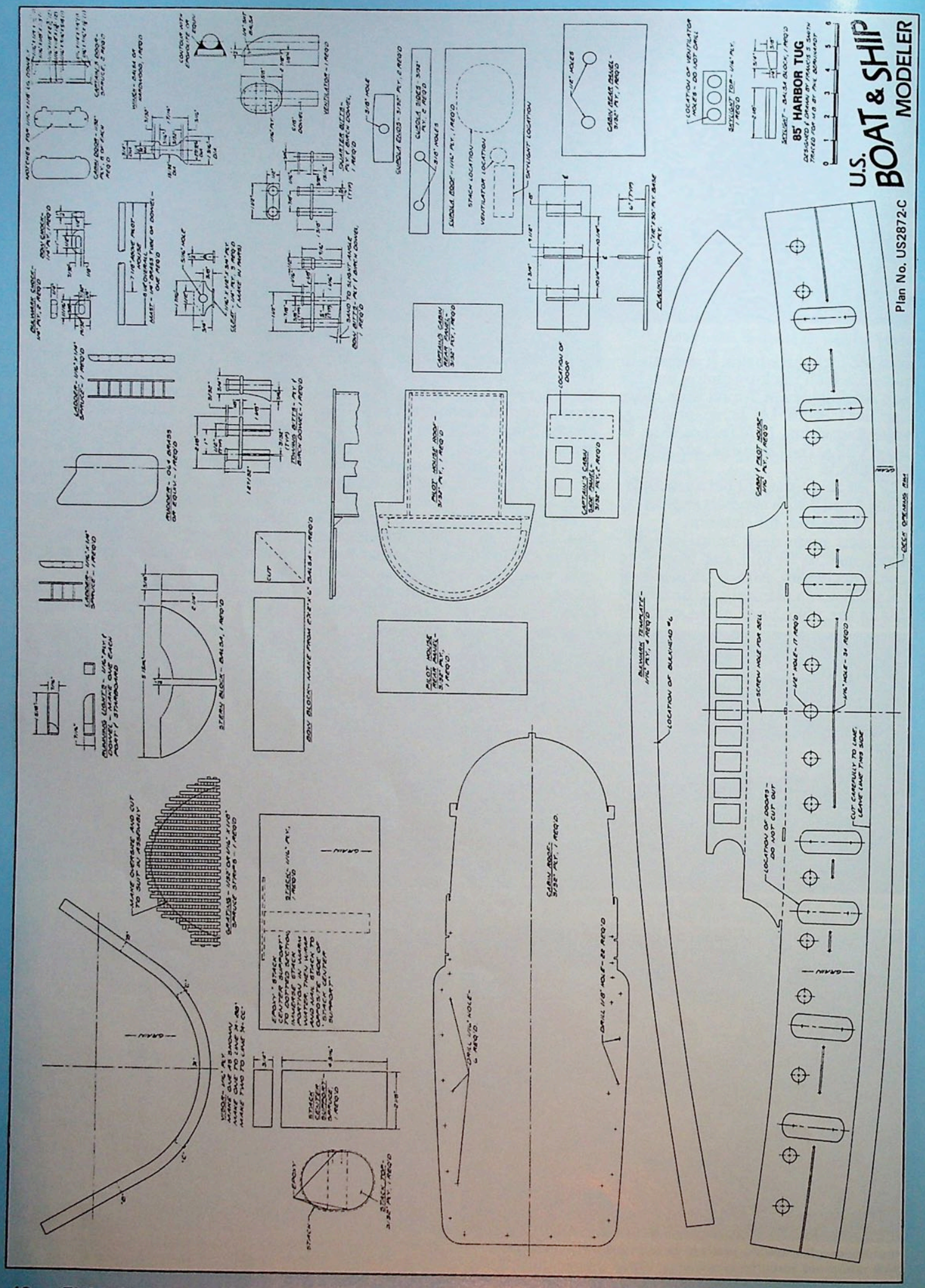
Aft cabin and stern grating. Latter is built up from strips of wood and then trimmed to shape.

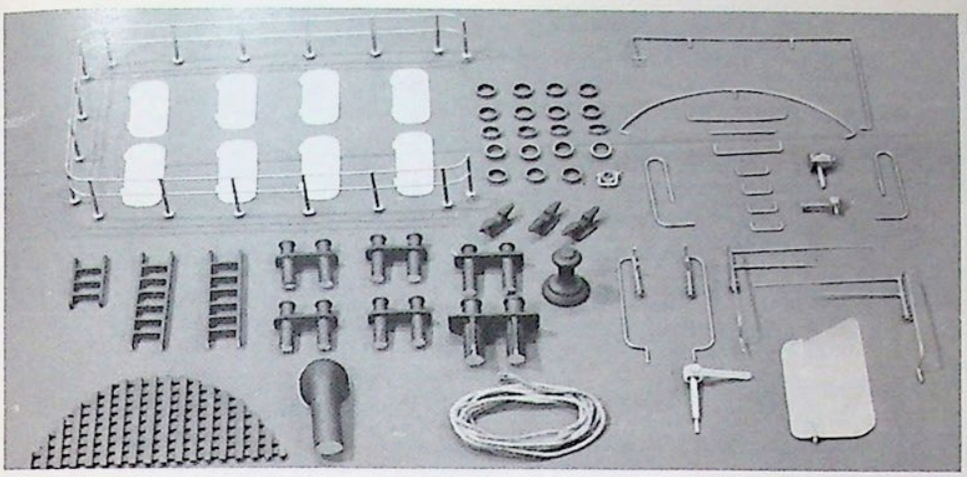


Pilot house sub-assembly, ready to be attached to roof of cabin. Note reinforced corners.



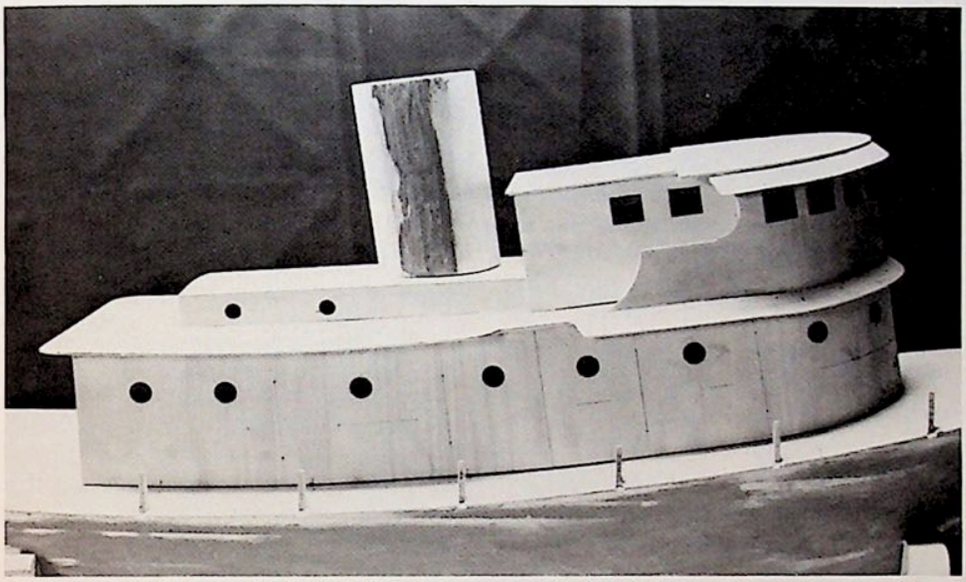
Upright view of cabin before pilot house is added. Note construction key. Stack is 1/64 plywood, soaked and bent to shape on a form.


U.S. BOAT & SHIP MODELER
85' HARBOR TUG
Plan No. US2872-C



Fittings, railings, doors, portholes, etc., are finished and painted before being added to the boat. Makes a neater . . and easier job . . than painting them after installation.

Reversible electric windshield washer pump operates bow thrusters.



Completed cabin structure, resting on deck. It fits over deck opening rim. and serves as a quick-opening lid to the radio and running gear in the hull.

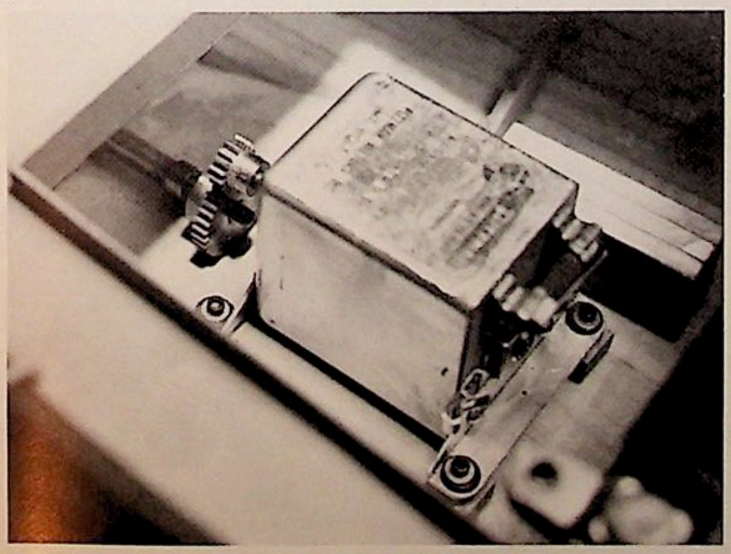
right, using top of main deck for the bottom edge. When this has set, install the second bulwark strip to the first. An optional way of applying the outer bulwark strip is to use three pieces, one piece about 8 inches long to cover the stern section, and two pieces to complete the sides.

18. Make the fenders from eight strips of 3/16 x 3/16 x 36 balsa or spruce, using four strips to each side of the hull. Glue one strip on at a time until a 3/8 x 3/8 square has been made. Use a piece of 3/8 x 3/8 x 12 balsa or spruce for the stern portion of the fender. Cut serrations about 3/16 apart and down to within 1/32 of the bottom, then glue in place. Fill serrations with Epoxolite or wood filler. Sand corners round to complete fender.

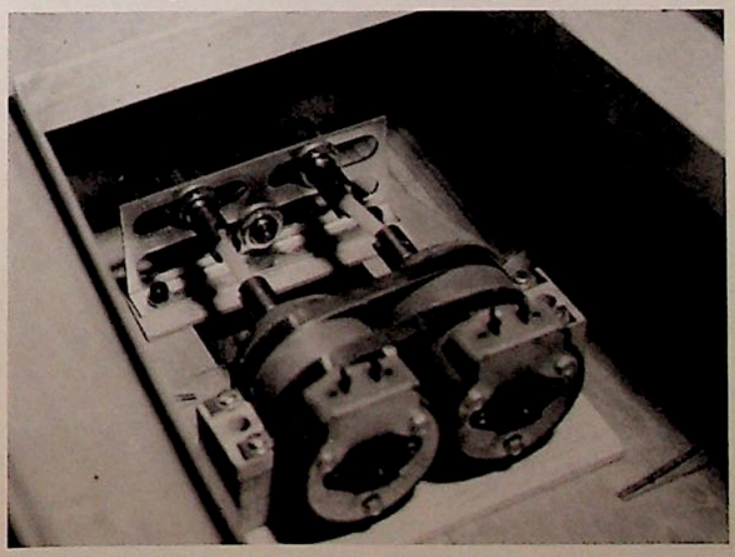
19. Glue a 1/4 x 1/4 x 26 piece of balsa or spruce to each side of the hull, 5/8 below and parallel to the fender from the bow to Bulkhead No. 6, continue with a smooth curve to end 1/16 below the water line to Bulkhead No. 8. Cut or sand a taper off the bottom from 3/32 inch at Bulkhead No. 8 parallel to the water line to Bulkhead No. 7. Sand all corners round.

20. Glue a 3/32 x 3/32 x 36 length of balsa or spruce to the upper outside edge of the bulwark flush with the top. Cut with a sharp knife all bulwark uprights to 3/32 below top of bulwark and glue another 3/32 x 3/32 x 36 length of balsa or spruce to the inner side of the bulwark flush with the top. This will give a 5/16 inch wide handrail 3/32 inch deep.

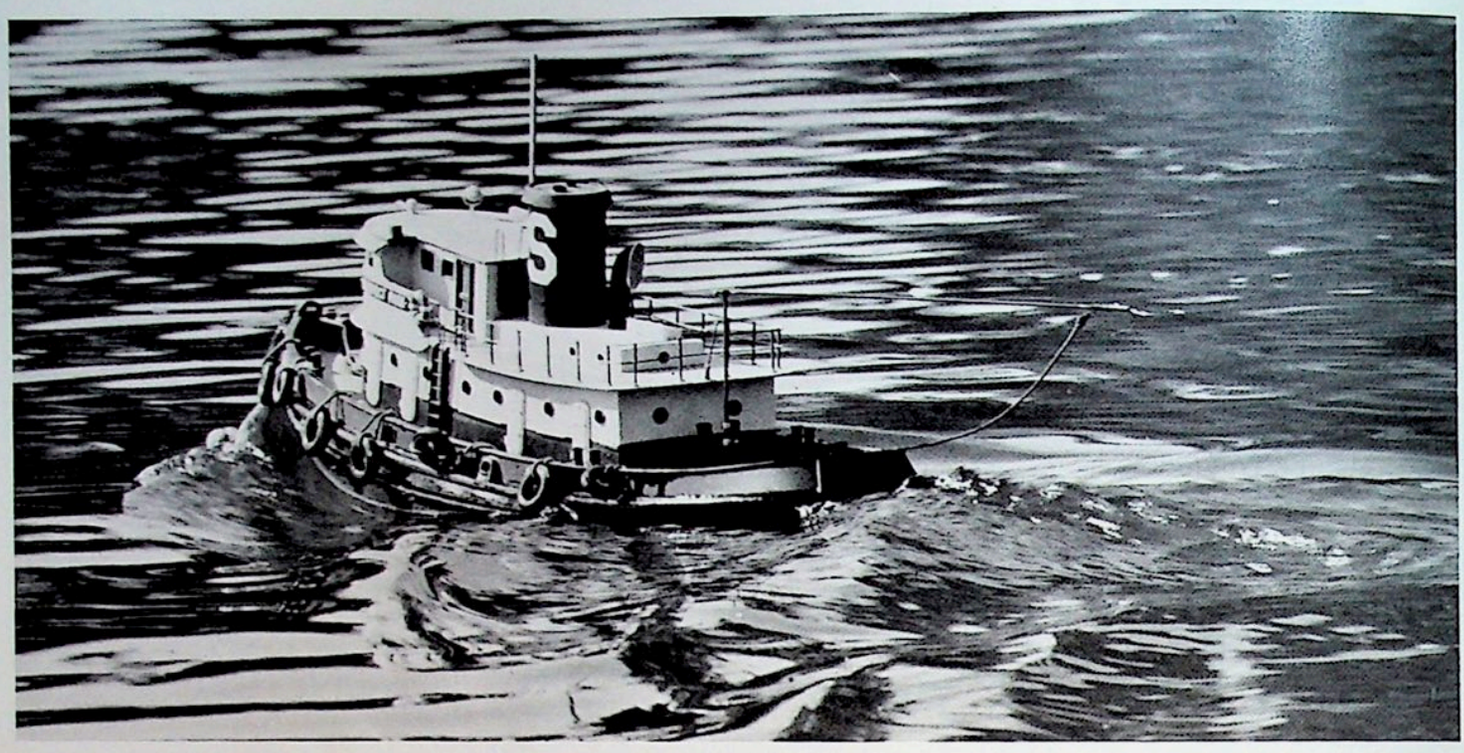
To continue with construction of the 85-foot Harbor Tug, my next step was to assemble the cabin roof to the main cabin by inserting into the slots and pushing the roof forward and locking the two sections together.



Single Pittman motor drive system with 1-1/2 to 1 reduction gears. Note overload circuit breaker.



Another drive system consisting of two Dumas motors with a Dumas 3-1/2 to 1 gear reduction. Note universal couplings.



The author's tug, Prospect Park," under a full head of st . . er, watts, heads out to pick up a stranded vessel. The swinging pick-up boom is ready to engage the target. The boom will then swing back, release the hook, and six feet of towline will pay out over the stern.

Using the hull as a support, the cabin was glued and weighted down. The cabin rear panel was attached and the pilot house rear panel was put on.

Making the pilot house, stack, cupola and ventilator was routine, and all epoxied to the cabin with the exception of the pilot house, which was made a removable piece.

The cabin doors were made next and the pilot house doors were attached, as well as window trim and the trim strip above the bell.

The detail pieces I made mostly of scrap wood according to the detail drawing, with the exception of the bell, horn and searchlight, which were purchased.

I made the portholes from brass tubing, and the handrails and railing were made from 1/16-inch O.D. tubing and brass rods. My method of making the railing was to drill a clearance hole for a 1/32-inch brass wire in the uprights and then slip 1/16-inch tube separators over the wire and solder the joints. It was similar to stringing beads.

I managed to salvage some 1/25-scale truck tires from the kids in the neighborhood, which worked out very nicely for bumpers. The bow bumper and rope were soaked in stain, which gave a more realistic look and texture.

I did not go overboard with sanding because I wanted to get a weathered look. The tug was painted, believe it or not, with Rustoleum; dark green below the waterline, flat black from the waterline to the top of the bulwark. The cabin was dark green below the handrail and cream above. The deck and roofs were painted gray.

My drive consisted of one Pittman Boatmaster motor powered by two motorcycle batteries, using a 1-1/2 to 1 gear ratio and a Pittman speed control.

A Ford windshield washer service kit was used for the bow thrusters.

When the tug is finished and ready to run, it weighs approximately 26 pounds.

21. From a 1/16 x 12 x 48 length of plywood (grain running in the 12 inch direction) cut the cabin and pilot house.

22. The cabin roof is made from 3/32 plywood. Assemble to cabin and pilot house section by inserting into slots and pushing forward to lock in place. (Putting 1/4 inch long x 1/16 dowels in roof section will aid in holding sides in place while gluing.) Place assembly on hull, epoxy well, and put weight on roof to assure good fit. Reinforce with balsa gussets after removing from hull.

23. The cabin rear panel can be made from 3/32 or 1/8 plywood and epoxied to cabin.

24. All pieces for the pilot house can be cut from 3/32 plywood. When fitted and epoxied, do not glue to cabin but rather, leave this as a removable section.

25. The cupola is made in a boxlike manner from 1/16 and 3/32 plywood. Epoxy cupola and cabin roof, allowing just enough clearance to install and remove the pilot house.

26. With Epoxolite, fill the bottom edges of the cupola to the outer edges of the cabin roof to give a beveled appearance, and sand smooth.

27. Cut the stack from 1/16 plywood, and, with the grain running vertically, epoxy to a 3/4 x 2-1/8 x 4-3/16 inch piece of spruce. Immerse this unit in warm water for about five minutes and complete forming the stack using nails. Carefully cut the stack top from 3/32 plywood and sand symmetrically to fit snug in stack. (Make two inserts if desired, one top and one bottom.)

28. Cut eight pairs of cabin doors from 1/32 plywood (cut eight pieces at one time for uniformity) and laminate. Insert 1/16 x 1/8 long wood dowels in in the slots and cement. Sand the door lightly to remove all corners.

29. The grating is made from 1/32 or 1/16 x 1/8 spruce strips as shown on the drawing.

30. Details:

Bell-Kemtron #390 or Walthers #X-12 ("O" gauge train bell)

Tires - 1/25 scale truck kits

Life preserver - 1/25 truck tire cut down the middle and wrapped with 1/4-inch masking tape

Portholes - 1/2-inch brass tubing cut into 1/8 to 3/16-inch in length

Front bumper - heavy terry cloth soaked in dark stain

Rope - corded string soaked in medium and dark stain

Cabin roof railing - 1/16 O.D. brass tubing uprights are drilled for 1/32 diameter brass wire over which lengths of 1/16 O.D. brass tubing are slipped for

horizontal separators, then soldered
Cabin hand rails - 1/16 brass wire or tubing
Horn and searchlight - purchased or fabricated

31. It is suggested not to go to extreme on sanding and painting for ultra finish. Finish with a touch of roughness to give tug a little character. Use of the tug will add weathering which will enhance the general appearance of the model.

32. The drive can range from one Dumas Pittman motor to two motors and geared from 1-1/2 to 1 to 4-1/2 to 1, depending on the purpose of the tug. A 1-1/2 to 1 would be for normal running and 4-1/2 to 1 for pulling barges, etc. The motors should be powered with two "YUSA" #6N11A-4D wet cell motorcycle batteries or equivalent. Use Dumas running gear, or small industrial gears.

33. Bow thrusters may be installed by using a Ford window washer repair kit ("Trico" #AWE-1, 12V.)

34. Make the rudder post from 5/32 O.D. brass tubing and solder a 1/8 inch square brass tube inside. This will fit over a 3/32 inch square brass tube which has been soldered to the rudder. By lifting the rudder post, easy removal of the rudder can be made for propeller changes.

Of course, most modelers who would tackle a construction project of this nature have their own ideas on power and control systems. However, the number of requests indicated a need to go a little further into the how-to of equipping the tug with electric power and radio control. Our request for this information brought a bonus . . . the trick towing rig with a swinging boom for snagging stranded or becalmed boats, or stalled seaplanes, and bringing them back to shore!

Because all the ideas in this concluding part on the Harbor Tug are in the form of suggested procedures only, we are offering them in the form of photos with extended captions. A couple of sketches are also included.

Photo No. 1: General view of the tug ready to launch. Receiver, receiver battery, and switch harness are mounted on a removable platform.

Photo No. 2: General view of the tug with receiver, receiver battery, and switch harness platform removed. This photo shows a servo mounted on top of a Dumas Speed Control unit, which gives forward variable speed, stop, and reverse variable speed. A second servo is mounted to a single-pole, double-throw, center-off, slide switch that operates a water pump (Sullivan electric fuel pump in this case). The 12 volts to operate this pump are tapped from the two, six-volt power batteries.

Photo No. 3: Close-up of receiver platform, showing antenna attached to a brass clip on the deck opening rim. A mating brass shim is glued to the side of the cabin, which is secured to the antenna wire.

Photo No. 4: Close-up view of the water pump for the bow thruster. Brass tubing is cemented to the sides of the keel and to bulkhead No. 2 , and then coupled to the pump nipples with flexible fuel line. The bow thruster is used when the tug is stopped and the rudder is ineffective. By using the bow thruster, the tug can be nudged at the bow for docking or nestling closer to stranded boats for retrieving, (see sketch).

Photo No. 5: Close-up view of tubing approximately 3/4 of an inch below

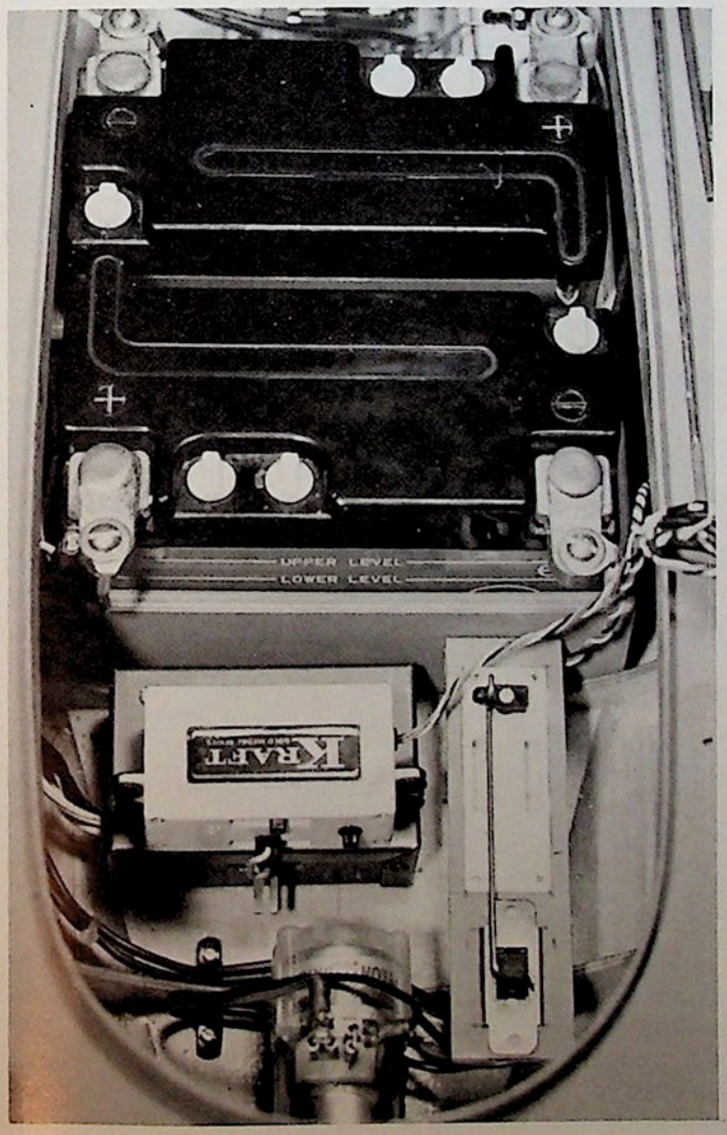
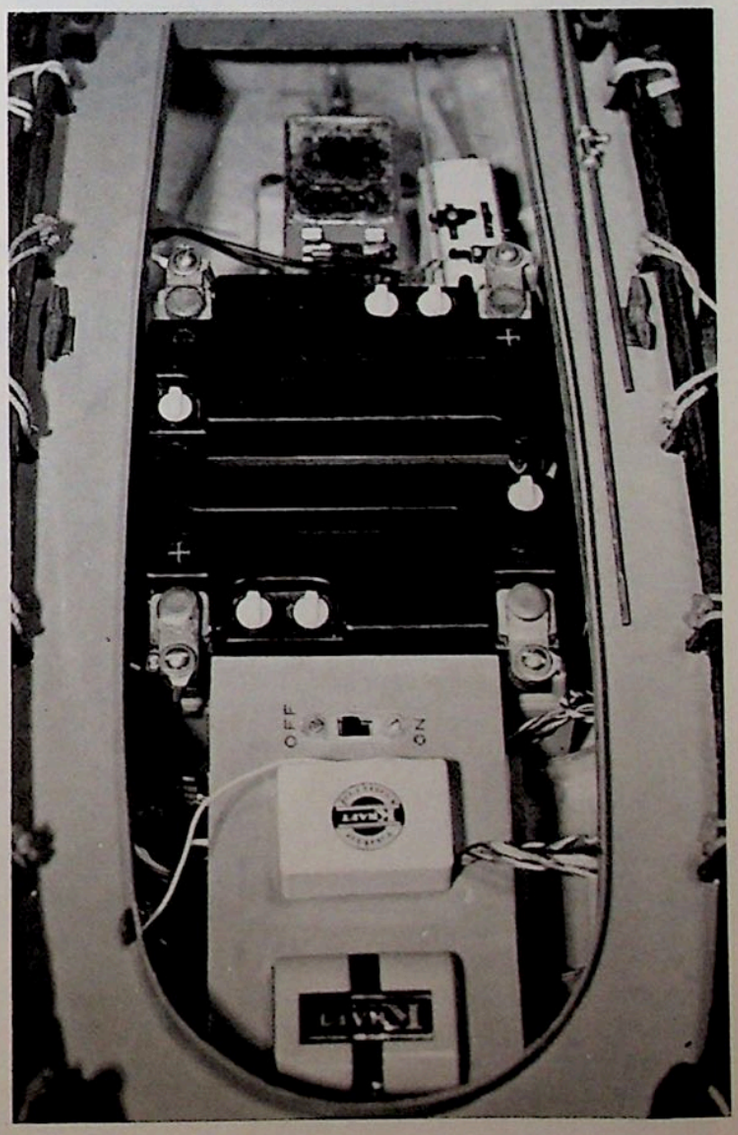


Photo No. 1



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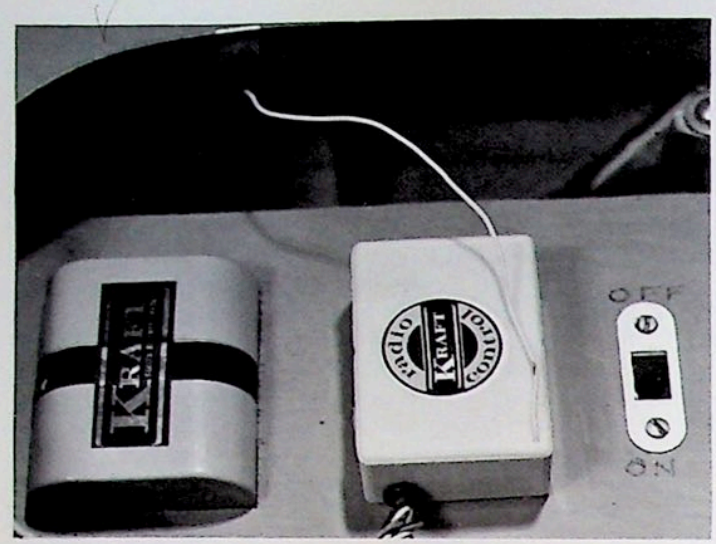

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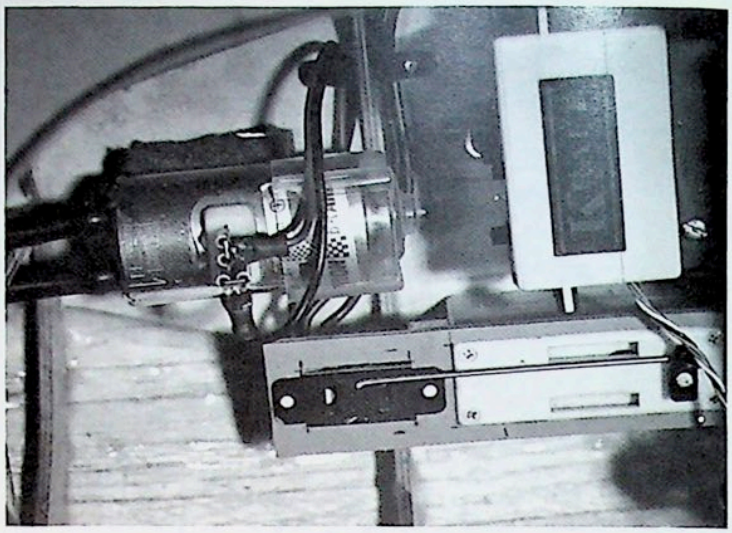

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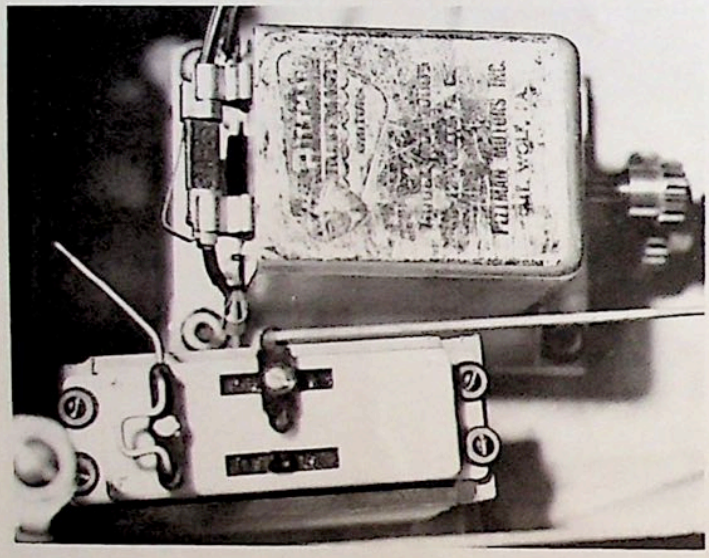


Photo No. 6

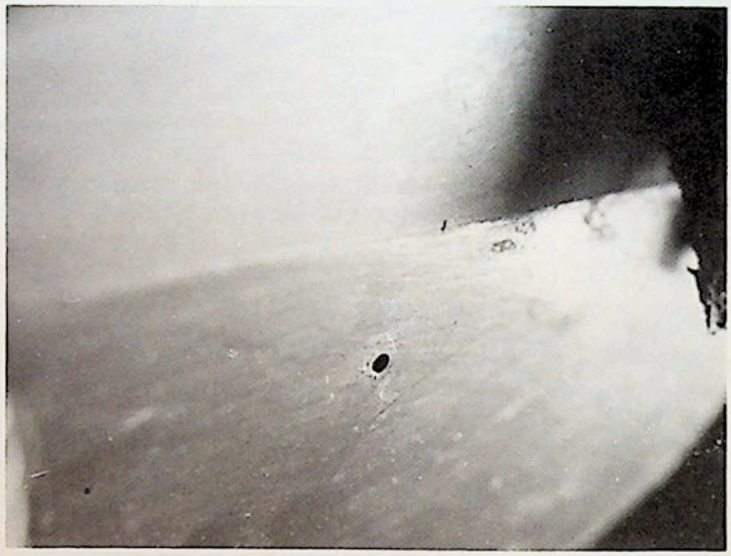


Photo No. 5

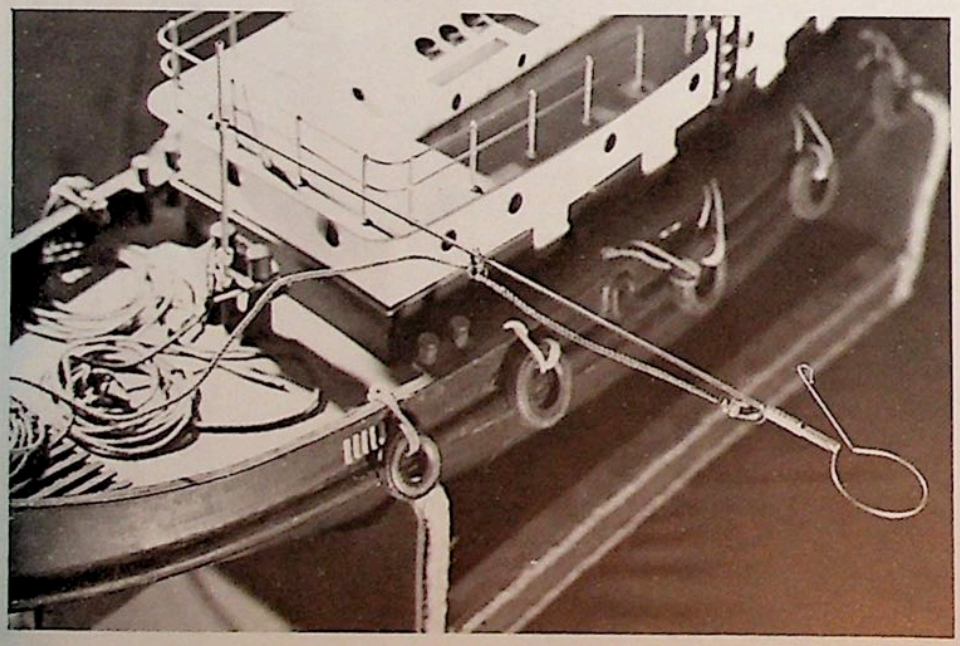


Photo No. 7

water line at bulkhead No. 2.

Photo No. 6: This photo is of the Dumas drive motor, using a 1-1/2 to 1 spur gear drive. It also shows the rudder servo and tiller push rod. A nice feature of this installation is the circuit breaker. When an overload occurs, the circuit breaker opens and the tug comes to a stop. The rudder servo is ineffective to steer the boat, so now it can be used to reset the circuit breaker. Once it has been reset, the servo goes back to operating the rudder. Not all motors are equipped with circuit breakers, but it is worth the effort to install one.

Photos No. 7 and 8 picture the towing rig. This contraption is popular with stranded boaters. The hook is mounted to a length of square brass tubing, and a towing line is attached to it; and the other end is tied or looped to the towing bitt. The hook and line assembly is slipped onto the horizontal boom, which also has a short length of a square brass tubing on the end. This square engagement keeps the hook level.

The horizontal boom is set-screwed to the require height (depending on the boat to be retrieved) on the vertical boom, which is spring loaded (ball point pen spring). The vertical boom is inserted into the towing bit tube and set-screwed (see Photo No. 8). When the tug hooks a disabled boat, the forward motion of the tug swings the horizontal boom to the stern, the hook slides off, and six feet of towing cable is drawn out, with which to tow the disabled boat back to port. •

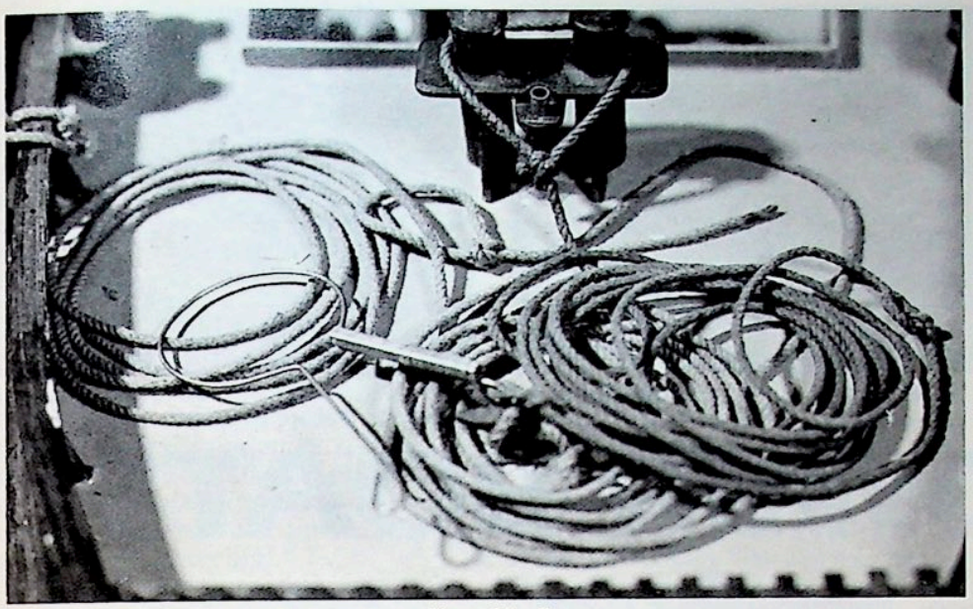
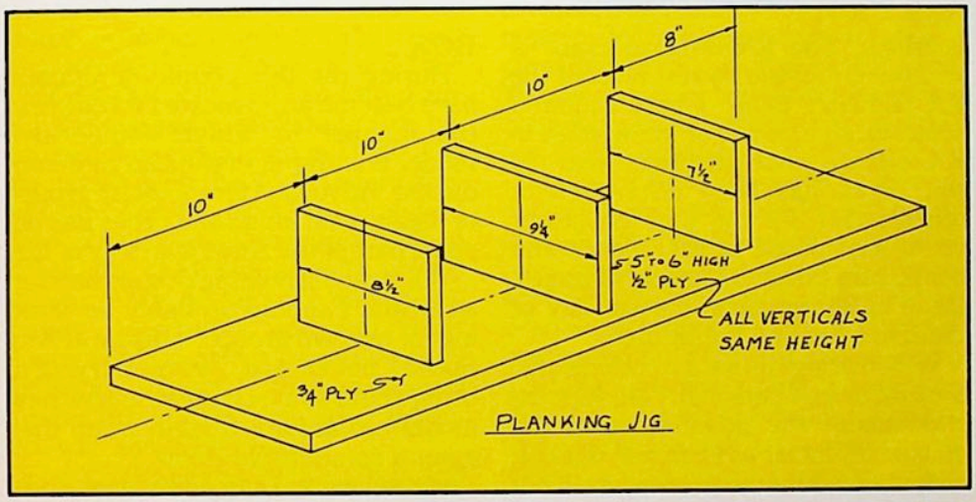
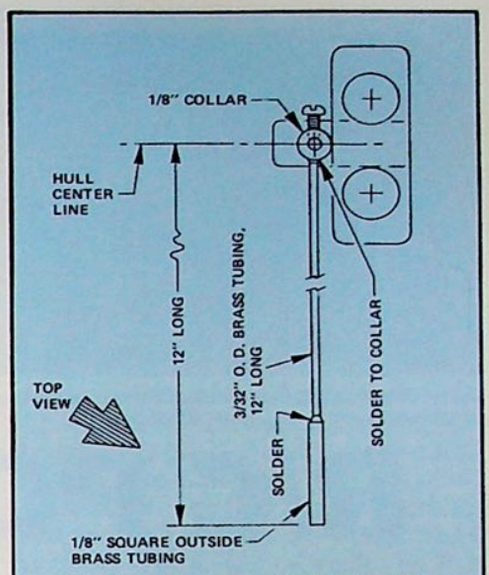
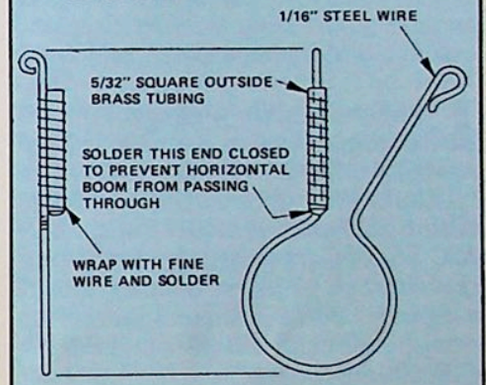
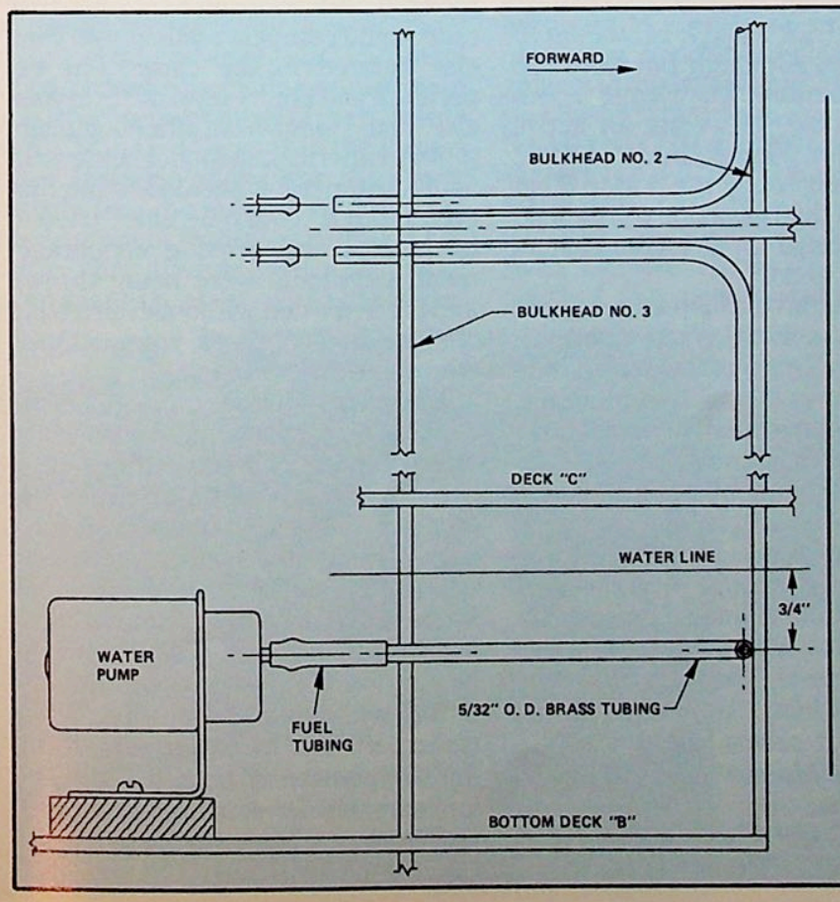


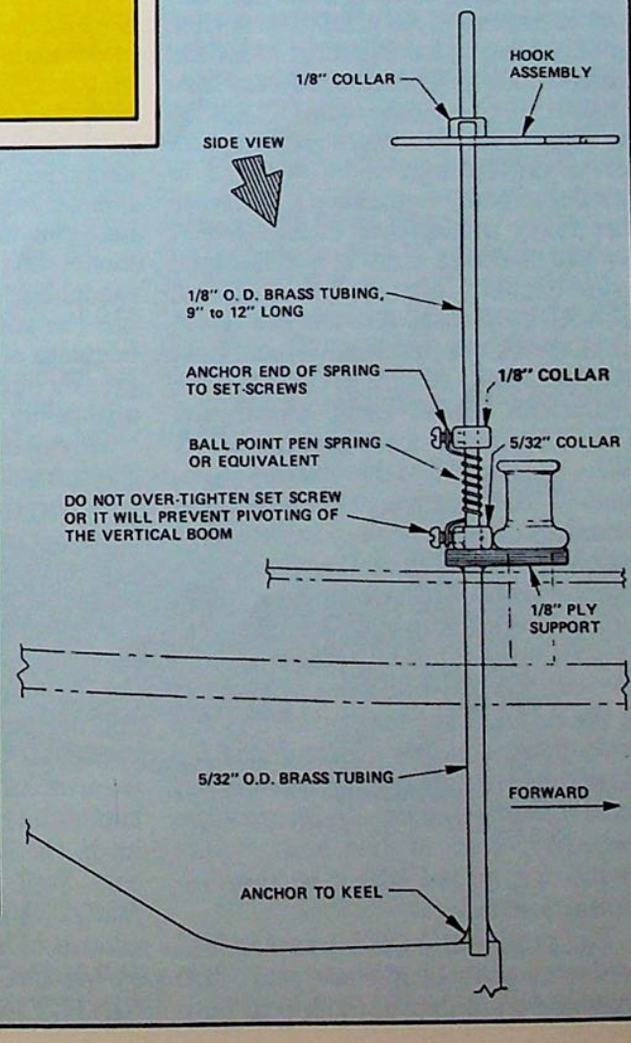
Photo No. 8

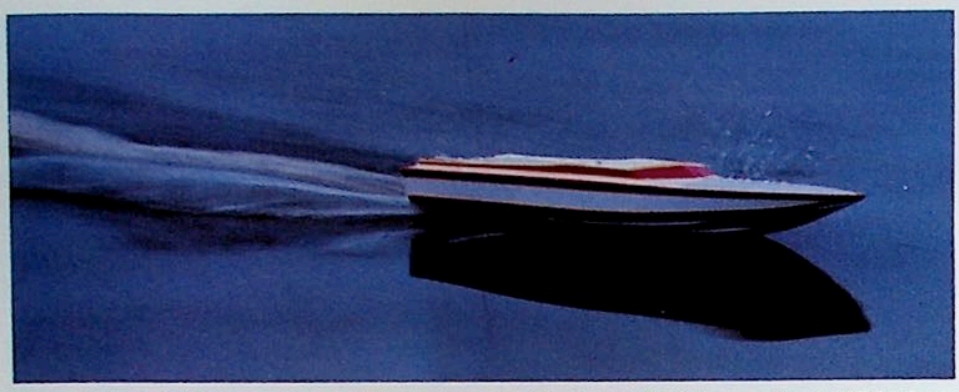

8"
10"
10"
10"
7½"
9¼"
8½"
5.5" to 6" HIGH
½" PLY
ALL VERTICALS
SAME HEIGHT
¾" PLY
PLANKING JIG


1/8" COLLAR
HULL
CENTER
LINE
12" LONG
3/32" O. D. BRASS TUBING,
12" LONG
SOLDER TO COLLAR
TOP
VIEW
SOLDER
1/8" SQUARE OUTSIDE
BRASS TUBING

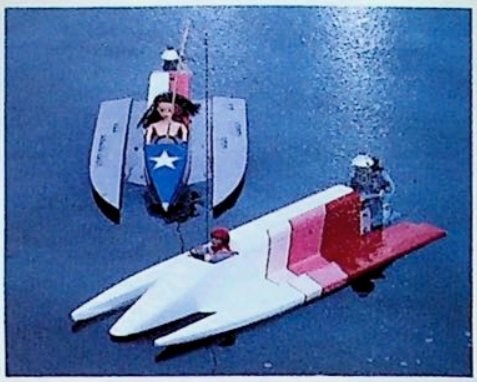

1/16" STEEL WIRE
5/32" SQUARE OUTSIDE
BRASS TUBING
SOLDER THIS END CLOSED
TO PREVENT HORIZONTAL
BOOM FROM PASSING
THROUGH
WRAP WITH FINE
WIRE AND SOLDER


FORWARD
BULKHEAD NO. 2
BULKHEAD NO. 3
DECK "C"
WATER LINE
3/4"
WATER
PUMP
FUEL
TUBING
5/32" O. D. BRASS TUBING
BOTTOM DECK "B"


1/8" COLLAR
HOOK
ASSEMBLY
SIDE VIEW
1/8" O. D. BRASS TUBING,
9" to 12" LONG
ANCHOR END OF SPRING
TO SET-SCREWS
1/8" COLLAR
BALL POINT PEN SPRING
OR EQUIVALENT
5/32" COLLAR
DO NOT OVER-TIGHTEN SET SCREW
OR IT WILL PREVENT PIVOTING OF
THE VERTICAL BOOM
1/8" PLY
SUPPORT
5/32" O.D. BRASS TUBING
FORWARD
ANCHOR TO KEEL



Jerry Dunlap's 05 Electric Day Cruiser moving out with Octura X-427 prop. Stock MRP 05 as supplied in kit, with seven-cell pack.



Jerry built these 3.5 Tunnels for Alex Leach and Donna Quarles. A good beginner's boat.

R/C POWER BOATS

By JERRY DUNLAP

I'd like to begin my first column in this initial issue of *U.S. Boat & Ship Modeler* with a "Thank You." The "Thank You" goes to Bill Northrop, editor/publisher of *Model Builder* and *R/C Model Cars* magazine, for having the courage to begin another model magazine. Some guys are gluttons for punishment, and Bill now qualifies for that classification.

For as many years as I have been writing model boating columns, and this is my twentieth year, it seems like model boating has been the stepchild of the model publication industry here in the U.S. of A. Some of this relegation to a lesser position on the pecking order is understandable. Compared to model airplane enthusiasts, there are far fewer model boat enthusiasts. I would suspect that the combined membership of the International Model Powerboat Association (IMPBA), the North American Model Boat Association (NAMBA), and the American Model Yacht Association (AMYA) might total around 5,000. When compared to the 100,000 members in the Academy of Model Aeronautics (AMA) a one to twenty ratio would seem apparent. I recognize that most of those who have model boats do not belong to a national organization. It is also safe to assume that most people with model airplanes do not belong to the AMA. That does not change the ratio, however. (*Jerry has overlooked the huge numbers of static and operational scale ship modelers who are an unknown quantity, and to the best of our knowledge, do not have a national organization. wcn*)

The proliferation of interest in R/C cars the past couple of years has spawned a number of model car publications. The R/C offroad craze is without doubt the hottest facet of the R/C industry today. I have acquired some small amount of knowledge in R/C offroad since my fifteen-year old son, Paul, has been involved with offroad cars for the past couple of years. Compared to R/C planes and boats, cars do have some advantages. But I'm not going to discuss any of them in a boating publication.

Which brings us back to *U.S. Boat & Ship Modeler.* I personally am very excited about the possibilities of the magazine. As far as I can tell, our editor/publisher has no preconceived notions about format or content for the magazine. (*Just enough to stay out of trouble! wcn*) Although Bill Northrop has considerable knowledge about model boating, he is not an active model boater. I know this is a cliche, but I'm going to say it anyway. What becomes of this magazine will depend greatly on what we as model boaters are willing to do.

We can use all the help we can get in the form of construction articles, kit reviews, coverage of model boating events, comments, and even criticisms. There are many creative model boaters doing many innovative and interesting things in this hobby. Some of them are probably even reading this first issue of the magazine. I would like to encourage and challenge model boaters to take the time to share their successes, or failures, with others possessing similar interests. There is an old maxim to the effect, "You are what you eat." Well, it seems safe to say *U.S. Boat & Ship Modeler* will be what you allow it to be.

JUMPING UP AND DOWN AND SHOUTING FROM MY SOAP BOX

During the last couple of years, I have become an advocate for reform in the manner in which competitive model boating is organized and conducted. Advocacy for minority groups or ideals of all kinds and types has become part of the American way of life.

What model boating groups need an advocate? I should probably be working for my own group, "Unsafe at Any Speed," but instead, I've been trying to bring about some changes in how new model boaters are treated when they enter a competitive event.

For as long as I can remember, a new model boater entering his or her first race would compete against everyone else entered in the class. The experience and ability level of "everyone else" could range from other beginners to very experienced model boaters. In many instances, it seemed to me that even though "everyone else" tried to be helpful and provide encouragement, beginners were being thrown into the lion's den without even a whip or chair. In most cases, you can guess who was devoured.

The need for a place for beginners to start is recognized in almost every other aspect of competition. It is doubtful anyone would be allowed to take the "Miss Budweiser" out for a heat of unlimited hydroplane racing who had not shown some previous ability to drive a smaller, limited class hydroplane. Can you imagine anyone being allowed to race at the Indianapolis 500 without any other type of race car experience? There are entry levels for competition in both R/C aircraft and cars, but for some reason, model boating has not provided such opportunities for beginners.

My own district would serve as a typical example of what has been happening. Here in the Northwest, we have some very fine model boaters. A quick check of model boating records set or national championships won by model boaters from the Northwest would substantiate this. There have been occasions when a new model boater would show up to watch one of our races before deciding to enter a race. After watching how fast the experienced model boaters were going, the beginner sometimes left discouraged, realizing how slow his boat was compared to what he'd just witnessed. It's a good thing most of those entering a model boat race for the first time didn't spend much time observing races before entering!

Prior to 1986, there was no class for the beginner in our area. The problem had been discussed for years and almost everyone agreed that something needed to be done. At the 1985 NAMBA District 8 Fall Meeting, a motion was passed establishing two beginners' classes starting in 1986. The two classes were the 3.5 Standard Tunnel Class and the Sport 40 Standard Class. These two classes were selected because they had already proved popular in our region with new model boaters. Beginners entering other classes would race "everyone else" just like always. However, the opportunity to enter two classes with other beginners was now available.

The 3.5 Standard Tunnel Class and Sport 40 Standard Class were raced at all 1986 District 8 Points races and a couple of other events. The 3.5 Tunnel Class proved especially popular, with about the same number of participants in the Standard Class as in the Expert Class. In the Sport 40 Class, there were usually half the number of entries in the beginners' category compared to the expert division. Because model hydroplanes present more challenges, the racing in the Sport 40 Standard Class was not as competitive as the 3.5 Standard Tunnel Class. The important thing, however, was the existence of a class for the beginner who wanted to race a hydroplane type boat.

The scoring system used for advancement is the same as used by AMA for advancing fliers through the pattern levels. The system is based on the number of contestants who actually compete at an event, and a multiplying factor. As an example, let's use an event with 10 contestants. The winner receives points equaling 3 times the number of contestants beaten. . . in this case, 9 people beaten, times 3, or 27 points. The second place finisher beats 8 others and with a multiplier of 2, earns 16 points. Third place and below receive one point for every person finishing below them. Once an individual accumulates 100 points, they move up to the Expert class. If this occurs during the racing season, the 100-point earner has the option of remaining in the Standard class until the end of that season.

I would like to see more clubs and districts offering classes for beginners in model boat competition. What that class might be could vary from area to area. I really think the 3.5 class, either deep vee or tunnel, is a terrific place for beginners. Both the cost and speed of 3.5 boats are something a beginner should be capable of handling. Any activity serious about self-preservation should be making every possible effort to assure those just beginning the opportunity to experience success and enjoyment. Establishing classes for beginners in model boating will go a long way towards that goal.

NEW OCTURA PROPS WORTH GETTING CHARGED UP ABOUT

Octura Models, 7351 N. Hamlin Ave., Skokie, IL 60076, has just released four new propellers which should interest those running 05 powered electric boats. The metal props are drilled for 1/8 inch prop shafts. The price for each of the new electric props is $8.95. If not available from your local hobby outlet, they can be obtained directly from Octura Models. The props are designated as 0930, 1427, X-427, and X-432.

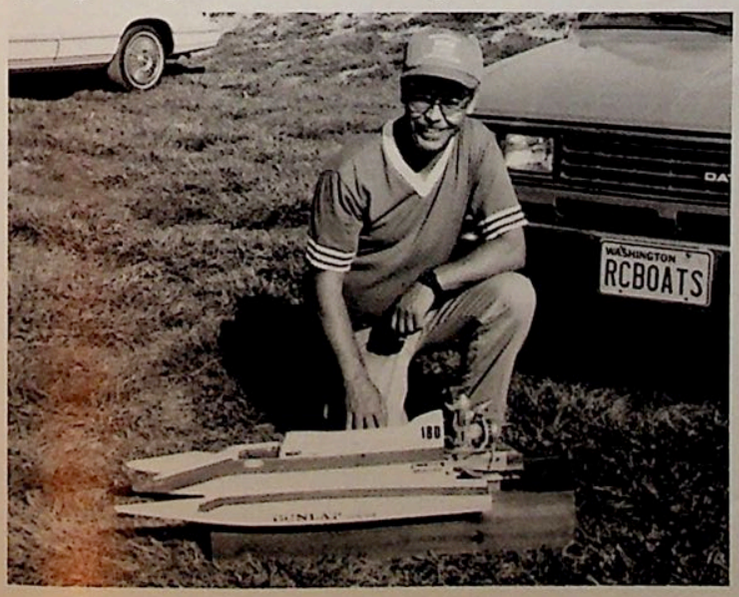
We have tested all four props on my "05 Electric Day Cruiser" which appeared as a construction article in *Model Builder* in 1985. The electric motor in the boat during the prop testing was an MRP Stock 05 selling for around $25.00. A 7-cell battery pack was used for power.

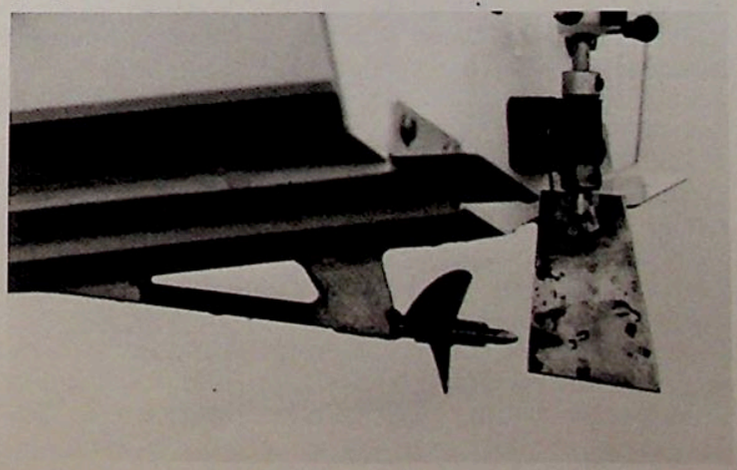
The X-427 was the prop that worked best with this motor/battery pack combination. The X-427 proved to be the best prop we have used on the boat to date. The X-432 seemed to place too much load on the motor. The 1427 worked well, but it did not perform as well as the X-427. The 0930, which has the appearance of a pleasure boat prop, provided the least amount of push. With a stronger motor, the X-432 might be a good prop.

SCALE DRIVERS BY GARCIA

Jack Garcia, A NAMBA Nationals Outboard Tunnel Champion, is offering two sizes of model boat drivers. The .21 size driver is 2-1/2 inches tall, and the .45 to .67-size driver is 3-1/4 inches. The drivers are fully helmeted and have a life jacket. They can be obtained unpainted or with the helmet painted orange, the visor and body painted black. The unpainted drivers are $5.95 for the .21 size and $6.50 for the .45 to .67-size. The painted versions are $8.95 and $9.50.

The drivers will work great in classes like the OPC tunnel, Deep Vee/Offshore, Sport 40, and R/C Unlimited. At this time, the model boat drivers are available directly from Jack Garcia Products, 309, W. Main, Hobbs, NM 88240. •





Left: Jerry Dunlap with his NAMBA record-holding 11cc Outboard Tunnel. Two-way average of 55.19 set in Oct. '86. License plate on his truck tells it all. Above: This X-427 is one of four new Octura props for electric powered boats.

"FRANK" ADVICE for Beginners

By DAVID FRANK . . . The author has progressed from raw beginner to knowledgeable model boater in two years, and thus can still relate to the trials and tribulations of the novice. The line of communication is open.

Editor's Note: The beginner in any hobby has many questions, and model boating is no exception. 'Frank Advice for Beginners' *will attempt to provide information and assistance in various aspects of model boating.*

David Frank, the column's author, knows well the questions, problems, and occasional frustrations experienced by those just starting in model boating. It was in the fall of 1985 that he resurrected a "DragN' Fly 60" built ten years previously and installed a motor and radio. After working and struggling for two months to get the boat to run, David contacted Jerry Dunlap for assistance. With some help From Jerry, the boat was successfully run.

Realizing the "DragN' Fly" was not going to be competitive in the Sport 40 Class, David build a new hydroplane for 1986. David raced this boat to first place in NAMBA District 8 Sport 40 Standard Class. He also placed second in District 8's 3.5 Standard Tunnel Class and third in the 7.5 Tunnel Class.

In less that two years, David Frank has progressed from a beginner to a very knowledgeable model boater. Unlike experienced model boaters with many years in the hobby, David can still identify with the beginner.

Due to my recent experience as a new model boater, I'm writing this column to help other new model boaters avoid some of the mistakes I made when getting started. The topic of this first issue's column will be on selecting a model boat. As all of my experience has been with competitive model boats, I will be focusing on this type.

GAS OR ELECTRIC?

Although fast electric boats have made some big gains in the last few years, gas. . . actually glow fuel. . . powered model boats still dominate the competitive events throughout the United States. For model boaters who are not interested in powerboat competition, electric boats have much to offer. They can be easy to build, or with many of the plastic models available, there's no building at all. They are easier to maintain than a gas boat and usually have fewer problems. As there is no noise, they can be run in many places where gas boats are not allowed.

Scale electric boats are a facet of the hobby all by themselves. Hopefully, there will be a column about scale boats in this magazine *(Yes indeed! wcn)*. For many people, scale model boats provide much enjoyment in both the building and operating.

Should you decide to run a gas powered boat, you have some choices to make. The first choice is hull type. The basic hull types are deep vee, hydroplane, and tunnel.

The deep vee, or monoplane hull, is usually very stable and easy to drive. It also has the ability to handle rough water better than a hydroplane or tunnel. Deep vees are uncomplicated to build and have lots of room to work with inside the hull. One of the things I enjoy about deep vees is their realistic appearance. Another plus for this type of boat is that it can be raced in both heat and enduro type racing. In many areas, one hull can enter two different types of racing at the same contest.

Let's next look at the hydroplane class. Hydroplanes are for the person who wants to go as fast as possible on water. The usual type of boats running in hydroplane classes are outriggers, canards, catamarans, and an occasional conventional hydroplane. Hydroplanes can be scratch built from plans, built from wooden kits, or fiberglass and ABS plastic hulls are also available. There are several excellent types of boats available that should suit your needs.

To decide what specific brand or type to buy, I would strongly recommend contacting someone in a model boat club in you area to see what they are running. You can usually find club information at your local hobby shop.

Two types of hydroplane that are most popular are Sport 40's and R/C Unlimiteds. These hydroplanes look like real unlimited or limited hydroplanes. The Sport 40 Class is a good class for the modeler who wants a real looking boat but doesn't want to spend the time and money to build a 60-powered R/C Unlimited. Some of the better running Sport 40's can be very competitive against 7.5 outriggers.

From personal experience, I can tell you that getting a hydroplane to perform properly can take a lot of work. If you don't know what you're doing, you can spend a lot of time and money and still not have a good running boat. I was fortunate to find some model boaters who really knew something about model hydroplanes and how to make them work.

OPC tunnel boats are also very realistic looking and fairly easy to run. The model tunnel is the simplest way to get started due to the outboard motor. With the outboard motor, you don't need as much hardware and fewer accessories as compared to an inboard deep vee or hydroplane. Some manufacturers offer model tunnel boats so complete the average modeler would be able to put it together and be on the water in a few hours (not including painting). In my district last year, the 3.5 and 7.5 tunnels were by far the most competitive and enjoyable classes I raced. I think this was due to the closely matched performance of the boats.

ENGINE SIZES

In addition to the three basic hull classifications, there are three main engine sizes. These engine sizes are 3.5 cc(.21ci), 7.5cc(.45ci), and 11cc(.67ci). Different engine sizes are popular in different parts of the country, In my district, the 3.5cc and 7.5cc classes for deep vees, hydroplanes, and tunnels, are the most popular. The most popular 11cc class in my district is the R/C Unlimited Class. It is less expensive to run a 3.5cc motor than an 11cc motor. Three times the engine size does not provide three times the speed or three times the fun.

SELECTING A RADIO

The popularity of R/C cars created a market for inexpensive two channel radios. The popular car radio systems work well for model boating use. Here again, it is a good idea to find out what system is popular in your area.

There are two types of two-channel radio transmitters. . . stick and wheel/pistol grip. The stick transmitter systems are usually a little less expensive. Personally, I like the wheel transmitter.

The wheel seems to make the most sense to me because it is used to control the direction of most things we drive.

Two rather handy items to have on a transmitter are servo reversing and rate adjustment for steering. It may cost a little more to purchase a system with these features, but I think they are worth it.

SELECTING AN ENGINE

Engine selection can be based on your plans for the model. If you are seeking speed, then you'll want to obtain a racing type engine capable of providing high RPMs. On the other hand, if speed is not a concern, sport engines or even a four-cycle engine should work well.

If a model outboard is your choice, then the K&B line of outboards are definitely the most popular for both sport and competition. There are a number of manufacturers of fine running inboard model boat motors. Names that are popular are: K&B, O.P.S., O.S. Max, Picco, Rossi, and Supertigre.

I've just provided a very basic overview of the most popular types of boats, engine classes, radios, and motors for racing or just for fun. If you're still not sure what type of boat and engine you want, find a model boating event in your area. Watch and ask questions. Most model boaters will be more than glad to help you out.

Model boating, like any hobby, takes time, dedication, and experience to achieve success. So don't get discouraged if things don't work right the first time. They sure didn't work out right for me the first time. I couldn't even get my boat to run the first time I took it out! If you think model boating is for you, then GO FOR IT.

Anyone who has a question about model boating can write to me for help. I don't have all the answers, but I know some people who have been in the hobby for many years and can usually provide answers to most questions.

Write to me care of *U.S. Boat & Ship Modeler*, 898 West 16th St., Newport Beach, CA. 92663. •

Sport 40 . . . . . *Continued from page 22*

radio than Futaba is used, it may be necessary to modify the dimensions to accommodate the radio.

36. Install the radio switch mount as shown. Install the servos. Insert the pushrod seals. Connect the upper pushrod linkage as shown on the plans. Bend the throttle pushrod as shown on the plans, and insert it into the end of a DuBro EZ Connector. The fillister-head screw should be replaced with a 6-32 by 1/8 set screw. Be sure to use LockTite on this screw during final assembly. The antenna wire can be run through a piece of flexible pushrod (Sullivan GoldN-Rod). Remove all the radio components, and paint the entire box inside and out. Wing seating tape can be used for a seal between the lid and the box.

37. The rudder pushrod is made from 9/32 aluminum tubing. To find the length of the aluminum part of the pushrod, mount the radio box and rudder. Allow 1-1/2 inches on each end. The end connectors are of 1/16 piano wire and attached to the aluminum tubing using the following technique: Bend an "L" a 1/4-inch long at the end of the connectors. Use a piece of 1/4 by 1/4 by 2-inch spruce with a hole the size of the piano wire connector drilled near the end. Put the "L" part of the connector in the hole in the spruce and along with glue, push it into the aluminum tube. Screws are threaded into the tube and spruce to keep the spruce from pulling out of the tube. Line up the pushrod, and drill a hole in the transom for the pushrod to exit.

Making the Cowling

Note: The cowling on the plans is for a cowling styled after a limited hydroplane. To keep the tuned pipe under the cowl, a header pipe was made, and the tuned pipe was bent in two places. It is possible to run the tuned pipe straight out the back of the cowl. The cowl fin could be eliminated, and the cowl opened up in back for the pipe to clear. It is also possible to build an original cowl.

38. Strap or tack the cowl side rails 1/16 below the deck on the inside of frames 9 and 10.

39. Drill two 1/4-inch holes in frame No. 1 of the hull as shown on the plans. Place cowl frame No. 1 in place, and mark and drill the holes in it. Insert two 1-inch pieces of 1/4-inch dowel into cowl frame No. 1. Glue in place, and file the holes in hull frame No. 1 so the dowels will slide easily. Glue cowl frame 2, 3, and 4 in place as shown on the plans. Using the cowl vertical fin as a guide, position frames 5 and 6, and glue in place. Cut four pieces of 3/16 spruce 2-3/8 inches long, and glue between the fin and side rails.

40. Remove the staples or tacks. The frame should stay snugly in place. If it doesn't, use some masking tape to hold it. Check the fit of all sheeting pieces. Trim as necessary. Glue the rear deck sheeting on the frames. Glue on the cowl front and rear sides. Glue the front cowl deck strips in place. Glue the front cowl bottom piece. Glue on the front cowl top sheeting, this can be made of 1/32 ply. Glue on the rear cowl top sheeting. Glue the two cowl scoop top pieces in position. Trim and sand as necessary.

41. The cowl can now be removed. The side rails should be sanded as necessary to allow the cowl to slip on and off easily.

42. The cowl front frames must now be cut away to allow clearance for the radio box.

43. Glue the driver figure platform in place and be sure it clears the radio box.

Finishing the Boat

44. The area where the fuel tanks go must be sealed to prevent water from entering the hull. This is done with either epoxy or thick C.A. glue.

45. Fill all pin holes, cracks, or gaps with Sig Epoxolite or an automobile-type body filler. Sand the hull and cowl smooth.

46. To begin the process of painting the hull and cowl, brush on a coat of K&B Super Poxy Clear thinned 25 percent.

47. Sand the hull and then spray K&B Super Poxy Primer on the hull and cowl. Lay on a heavy coating of the primer, as it can be sanded easily once it has dried. The primer will fill the grain in the plywood sheeting.

48. Check again for any holes or cracks that need filling. Fill as needed and sand.

49. Apply a final primer coating and sand smooth.

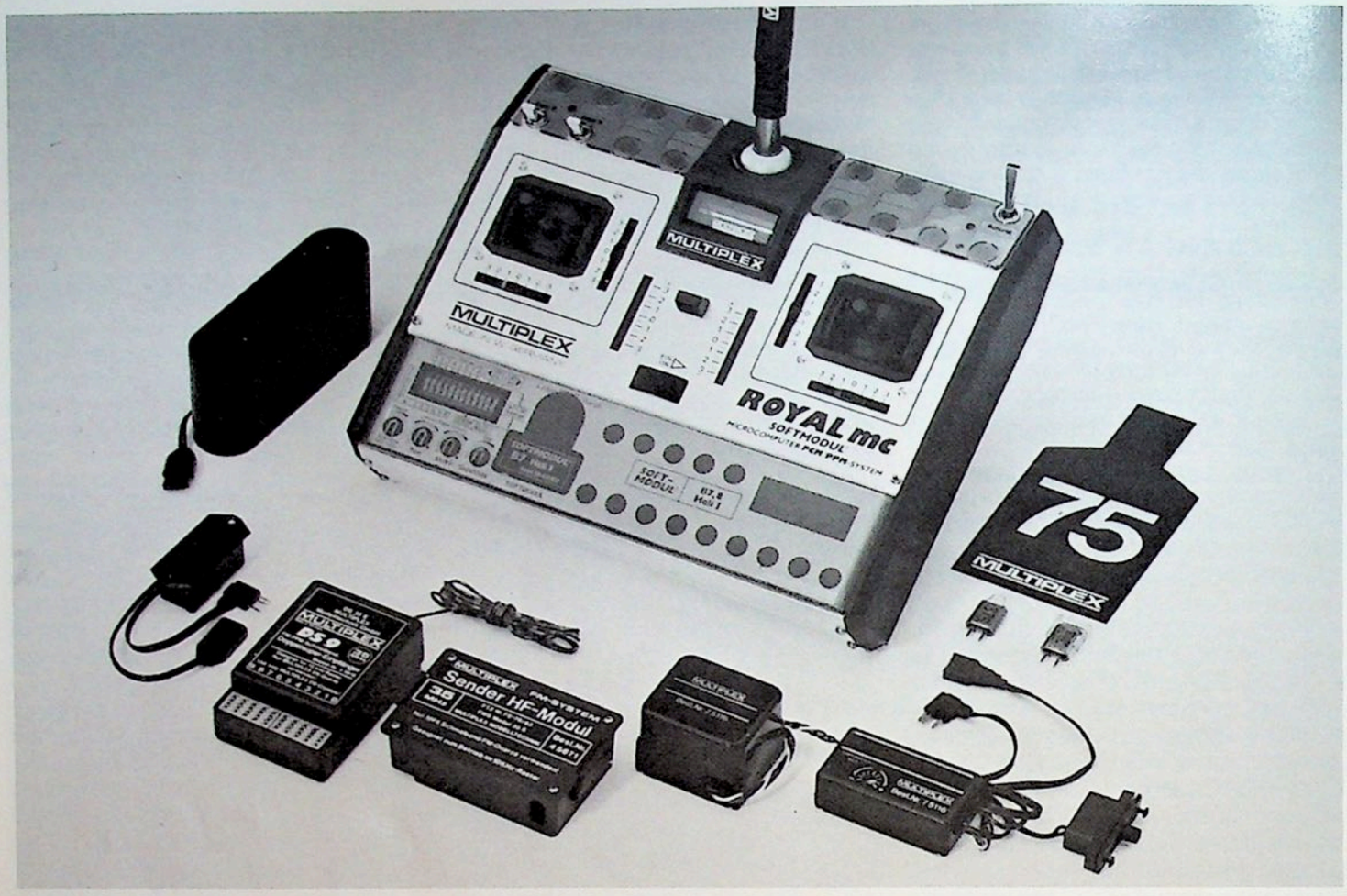
50. The hull is now ready for the color coatings. It is recommended that the primary color be applied first and then the boat can be masked off for spraying of contrasting colors. K&B Super Poxy paints were used for the color coatings on this boat.

RUNNING THE D.F. SPORT 40

The first time this boat was launched, it ran very well. The key to a fine-running hydroplane is attention to detail. The prop depth and angle, turnfin size, location, and angle, and correct propeller are vital. Both the Octura X-452 and X-455 props have worked well on this boat. At top speed, the hull of the boat should be parallel with the water. If the transom is low, drop the strut slightly to increase the angle. Should the boat ride with the bow too low, raise the strut to lessen the angle. It has not been necessary to add any weight to adjust the ride of the D.F. Sport 40.

It will take some experimenting with props, prop depths, and angles to achieve maximum performance. The testing that has been done with the D.F. Sport 40 indicates it is capable of running with the best hulls in the class.

Have fun! •



The Multiplex Royal MC, an extremely versatile R/C system, especially adaptable to R/C boats and ships. For the discriminating modeler.

RADIO WAVES

By ELOY MAREZ . . . Many modelers want to use radio control, but usually consider it a necessary evil. The author is known for his ability to take the mystery out of R/C so that anyone can get along with it.

The dictionary gives one definition of "Radio" as "Electronic equipment for the transmission or reception, or both, of electromagnetic waves, especially when used to transmit and receive sounds, activate a remote-control mechanism, etc.; a radio set."

That is exactly what we will be talking about here in "Radio Waves"; the equipment used for the transmission, reception, etc., especially that part where it talks about activating a remote control mechanism. Oh, we will touch upon related accessory equipment, such as battery chargers, meters and testers, speed controls, and whatever else catches our (yours and mine) interest from time to time. I have no intentions of trying to make yours a purely electronics hobby. . . I realize full well that your primary interests are in things that run on, or maybe even under, water. However, the radio control system is an important part of your vehicle, and understanding and using it properly will greatly enhance your enjoyment, which is what you are into this for in the first place.

To start, I would like all of you to remember that while I will be pressing the keys on the word processor on this end, you are not without control as to what comes out. Your ideas, suggestions and requests for future subjects will determine in large what those subjects will be. That is, your questions will be answered, in as nontechnical language as possible, though please keep in mind that by it's own nature, electronics and radio can complicated. I will not drown you with words without attempting to explain what they all mean and more important, how they relate to controlling your pride and joy. We, your fellow readers and I, also want to hear about a problem you may have encountered and your solution to it. If you haven't solved it yet. . .we'll ask, maybe someone, somewhere, has.

Also, our manufacturers and importers are invited to contribute to "Radio Waves'. Send in information about your model boat electronic equipment, new or old. Brochures and catalogs are fine, and don't forget a good black and white photo, and if we feel that it fills a need, appears to be of acceptable quality and is not outrageously priced, we will include it in a future issue. At no cost! You can't beat that!

"THE NEW FREQUENCIES" is a subject that is much discussed these days, and it is important enough to deserve a review. It is more important now, because this year, in a few short months, there will be drastic changes in what we may and may not, legally use. I would like to repeat that work "legally." You should remember the frequencies we use have not been decided arbitrarily by any means or by any group, not even the manufacturers of

the equipment, or by the Academy of Model Aeronautics, better known as the AMA. No sir, our frequencies are available to us by law, Federal law that is, and as such, impose some serious responsibilities on all of us, from the manufacturers, to the sellers, and ultimately to you, the user. The Federal Communications Commission, the Government body that assigns and controls the use of all radio frequencies in our country, has recently released a rather strongly worded notice that it is aware of previous infractions of the rules and that it intends to see that they are enforced. Said statement reads in part:

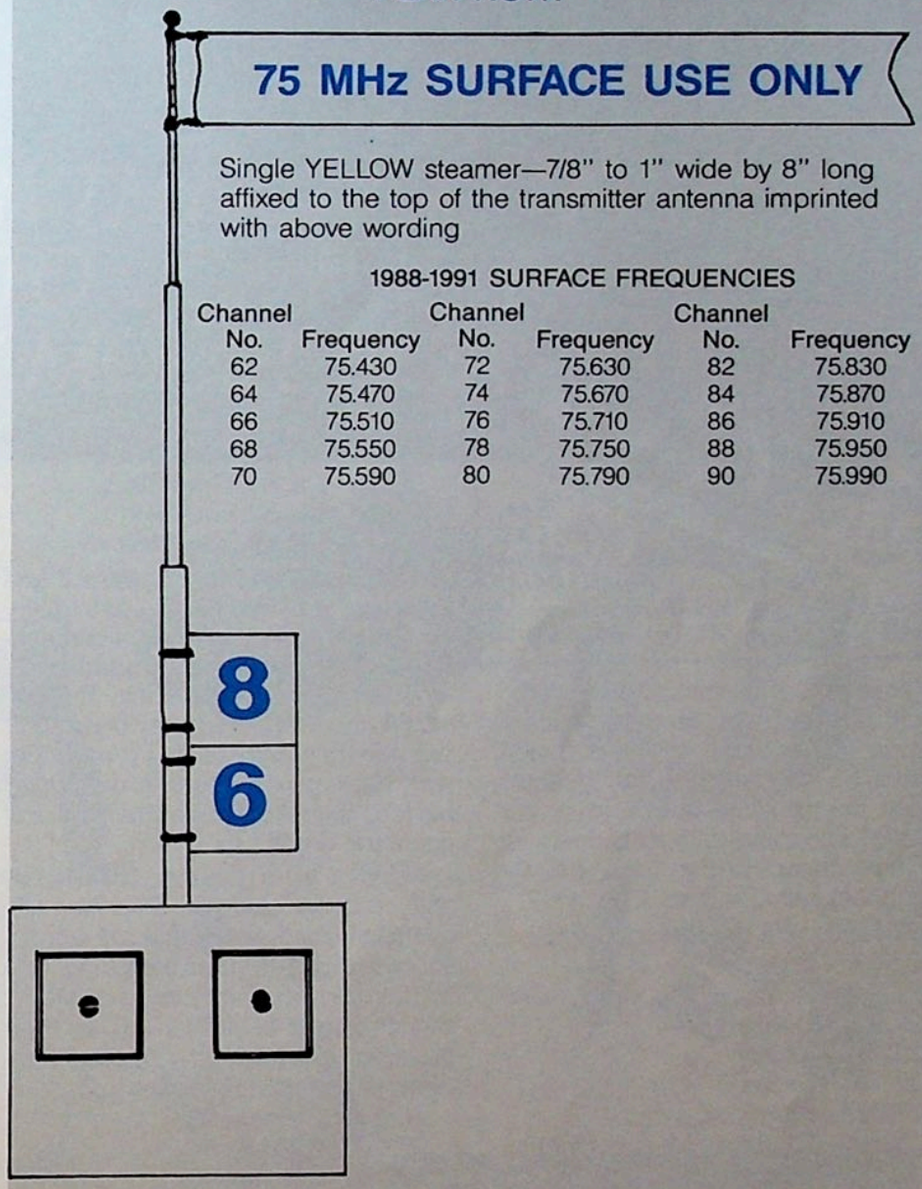
"Section 302 of the Communications Act of 1943, as amended (47 USC), provides that no person shall market or use a device which fails to comply with the Commission's regulations,. The willful and knowing sale or use of an R/C device which transmits on an incorrect frequency is in violation of that section of the Communications Act.

"Dealers selling an R/C system with a model craft for which it is not intended to be used, or with knowledge of the intended use, are responsible for ensuring that the R/C equipment is equipped with proper transmitting frequencies. Similarly, each operator of an R/C transmitter is responsible for determining that it transmits on a channel authorized for the type of model craft being remotely controlled.

In short, there are three completely different and separate groups of frequencies for our use. One is the original 27 MHz band with no restrictions on the type of model; one on 72 MHz for models that fly, and another on 75MHz for models that don't. The latter includes all radio controlled model cars and boats. Currently, for the rest of 1987, there are three shared 72 MHz and one shared 75 MHz frequency, as will be explained shortly. The above statement came about as a result of serious infringements by persons who obviously knew better, and some who were misled by them into using flying model frequencies for nonflying models, and vice versa. It also refers to the somewhat prevalent use by certain groups of modelers of frequencies completely outside the 72 and 75 MHz bands; on which equipment made for foreign use is available. Now it is clearly spelled out for us that anyone who sells or uses a radio system for a different type of model than that for which it is intended is subject to Federal prosecution. . . and deserves it. We all stand to lose because of the improper actions of a few.

Anyway, as of now, the following list-

FREQUENCY IDENTIFICATION SYSTEM
EFFECTIVE JANUARY 1988
PLAN NOW!



Single YELLOW steamer—7/8" to 1" wide by 8" long affixed to the top of the transmitter antenna imprinted with above wording

1988-1991 SURFACE FREQUENCIES

Channel No.	Frequency	Channel No.	Frequency	Channel No.	Frequency
62	75.430	72	75.630	82	75.830
64	75.470	74	75.670	84	75.870
66	75.510	76	75.710	86	75.910
68	75.550	78	75.750	88	75.950
70	75.590	80	75.790	90	75.990

CHANNEL NUMBER PLAQUES

One and one-half inch **BLACK** numerals with 1/4" stroke mounted on a white background, visible on both sides of the plaque.

At modeler's option, they may read horizontally or vertically and be attached at the base, center, or top of the antenna.

Non-reflective materials recommended.

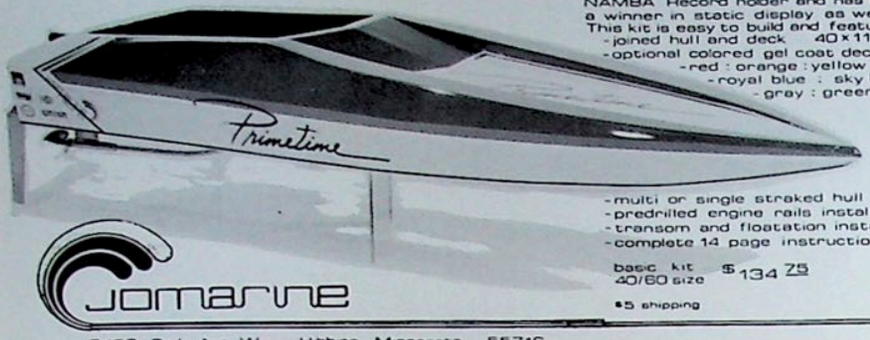
OTHER BANDS
(Model Aircraft or Surface Models)

27 MHz

Single, colored streamer or triangular flag—7/8" to 1" by 8"

26.995	Brown	27.095	Orange	27.195	Green
27.045	Red	27.145	Yellow	27.255	Blue

This competition proven hull is a NAMBA Record holder and has been a winner in static display as well. This kit is easy to build and features:
- joined hull and deck 40 x 11
- optional colored gel coat deck $7
- red : orange : yellow
- royal blue : sky blue
- gray : green



- multi or single straked hull
- predrilled engine rails installed
- transom and floatation installed
- complete 14 page instructions

basic kit 40/60 size $134.75

$5 shipping

Comarine

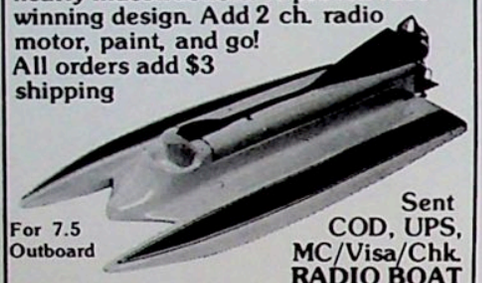
3422 3rd Ave W Hibbing Minnesota 55746

THUNDER HAWK B-OPC

$129.95 (almost ready to run)

Our new 31" tunnel boat needs no construction or radio box, and is nearly indestructible. A proven race winning design. Add 2 ch. radio motor, paint, and go!

All orders add $3 shipping



For 7.5 Outboard

Sent COD, UPS, MC/Visa/Chk.

RADIO BOAT

3800 Firestone Blvd. South Gate, CA 90280, (213) 564-5801 – CA add 6% tax

ed frequencies are the only ones authorized for Nonflying Models, which of course includes all types of model boats. No Virginia, not Flying Boats, those are still considered to be airplanes! The colors and/or channels listed are those to be used for the frequency identification flags.

27 MHz - All types of models:
26.995 - Brown
27.045 - Red
27.095 - Orange
27.145 - Yellow
27.195 - Green
27.225 - Blue

75 MHz - Nonflying Models Only:
72.160 - White/Blue*
72.320 - White/Purple*
72.960 - White/Yellow*
75.430 - Ch. 62, Blue/Red
75.470 - Ch. 64, Blue/Yellow
75.510 - Ch. 66, Blue/Blue
75.550 - Ch. 68, Blue/Gray
75.590 - Ch. 70, Purple/Black
75.640 - White/Green*
75.670 - Ch. 74, Purple/Yellow
75.710 - Ch. 76, Purple/Blue
75.750 - Ch. 78, Purple Gray
75.790 - Ch. 80, Gray/Black
75.830 - Ch. 82, Gray/Red
75.870 - Ch. 84, Gray/Yellow

If you will count them, you will find that there are twenty-one legal frequencies we can be using. This is certainly more than the largest number of models, flying or nonflying, that we would care to operate in any one area at any one time. Sure makes you wonder why some people seem to think they have to operate on unauthorized frequencies, doesn't it?

Anyway, as of January 1988, there will be some changes. The four frequencies listed above that are not assigned channel numbers and are further identified with an asterisk (*), will no longer be authorized. In their place, and also for Nonflying Model use only, we will gain the following:

75.630 - Channel 72
75.910 - Channel 86
75.950 - Channel 88
75.990 - Channel 90

In addition, a completely new channel identification system will come into effect. The current number and colored flag system is to be dropped, and a new system, as indicated by the enclosed sketch, will come into effect. The bottom line is that you should start to consider the need to change your operating frequency if you are now on one of the older 72 MHz or 75.640 spots. If you need to return your system to a service center for any reason, it will definitely be cheaper for you to get that frequency change at the same time.

TRUE BOAT RADIOS are few and far between! There is no doubt that our needs vary according to the type of model we are running, and while the racer can get along just perfectly with one of the many systems developed for R/C car use, the scale model boater has completely different needs. If this is your interest, we'd like to introduce you to the Multiplex Royal MC.

Multiplex R/C is made in Germany, where it seems to be the most popular and best selling system. It is available here in the US through Beemer R/C, in Arizona. A complete report on this extremely versatile system is available in our companion publication, *Model Builder*, for May 1986, copies of which are still available. Therefore, I will not take the space here to explain in detail all that the system can do, except that it includes a lot of features worth taking a second look at. It is available in either PCM or PPM versions, uses modules on the transmitter, can be tailored EXACTLY as you require for your type of model; airplane, helicopter, glider, and yes, even boat!

Here is where it gets interesting for you. . . the Royal MC can be fitted with various plug-in modules which can extend the basic eight proportional channels by 16, 24, or 48. . .yes, 48, switched channels. Admittedly, this is not an $85 radio, but if you are serious about scale boating, it is not out of range, and you'll never need another one.

For complete information, rustle up Bob Boomer, at Beemer R/C West, 7725 E. Redfield Rd, Suite 105; Scottsdale, Arizona, 85260; (602) 990-8687, and tell him *U.S. Boat & Ship Modeler* sent you.

Till next time! don't forget, you can help shape the future of "Radio Waves", so let's hear from you. •

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Shipwright . . . *Continued from page 13*

formed plastic in most cases. The better grade kits use Glass Reinforced

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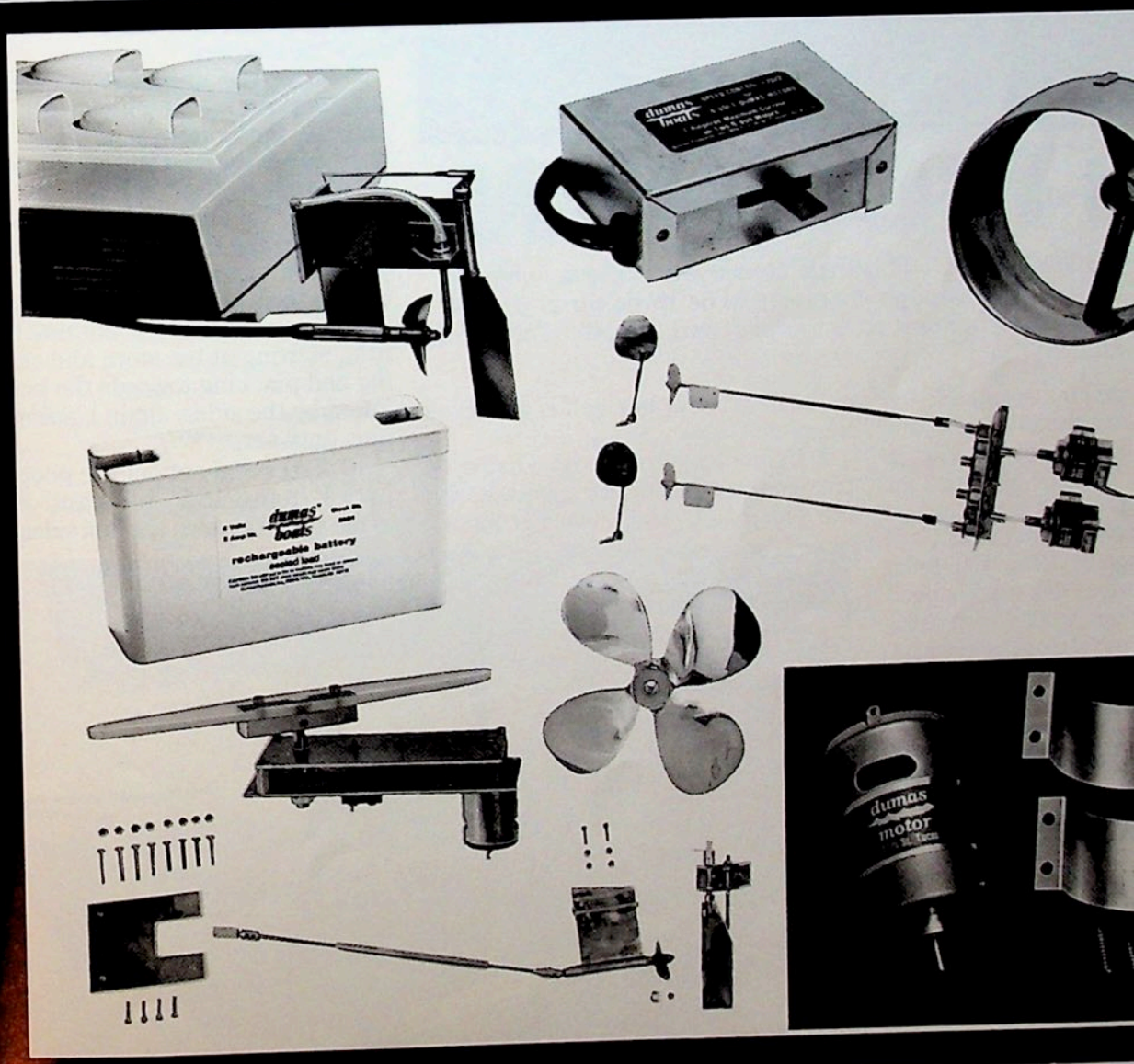

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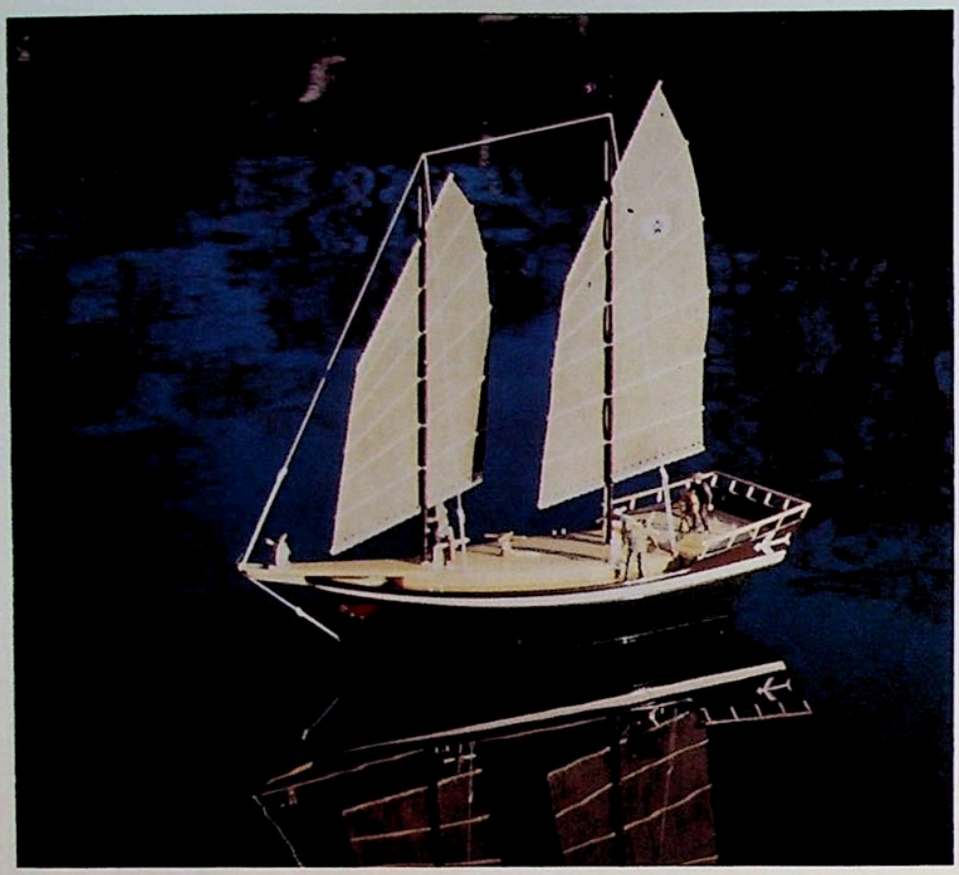


SLO-MO-SHUN

By GRAHAM GOODCHILD . . This little conversation piece, whether it's "sittin" or "sailin," has enough character to be three times its size. But then "small" is what makes it so attractive, and "small" is the budget needed to build it!

This near-scale junk is suitable for sailing in small ponds or back yard paddling pools, Construction is straightforward, using sheet balsa for the frame and deck, and art card or mounting board for the hull skin. Card has the advantage of being able to be cut with scissors and will readily bend to curves, and when treated with cellulose dope, results in a tough and watertight structure.

Alloy tube is used for the masts and spars for strength and lightness, while the sails are cut from thin plastic drafting film which can be realistically painted and attached directly to the masts without having to stitch hems, etc., as with conventional cloth sails.

Sail trimming is achieved by pivoting the masts and sails together through linkages to the servo. The sails and servo assembly are in one unit housed within the removable deck hatch for easy access.

The plans and construction photos should be self-explanatory.

CONSTRUCTION SEQUENCE

1. Trace and cut out parts A to D from 3/16-in. balsa, including the two halves of the deck. Only one half is shown on the plan.

2. Cement together the two halves of the deck on a flat surface, together with the deck hatch cover, which is cut out from the middle of each deck half.

3. Bevel the top and bottom of transom A, including the slot for the keel. Mark and cement to the keel D. Note that the rear end of the keel protrudes through the transom for attachment of the rudder tube.

4. Mark on the positions of frames B and C, and cement to the keel.

5. Lay the deck on a flat surface with the underside uppermost and cement the hull frame to it in a position where the inside of the stem is flush with the forward end of the hatchway. Pin if necessary until set.

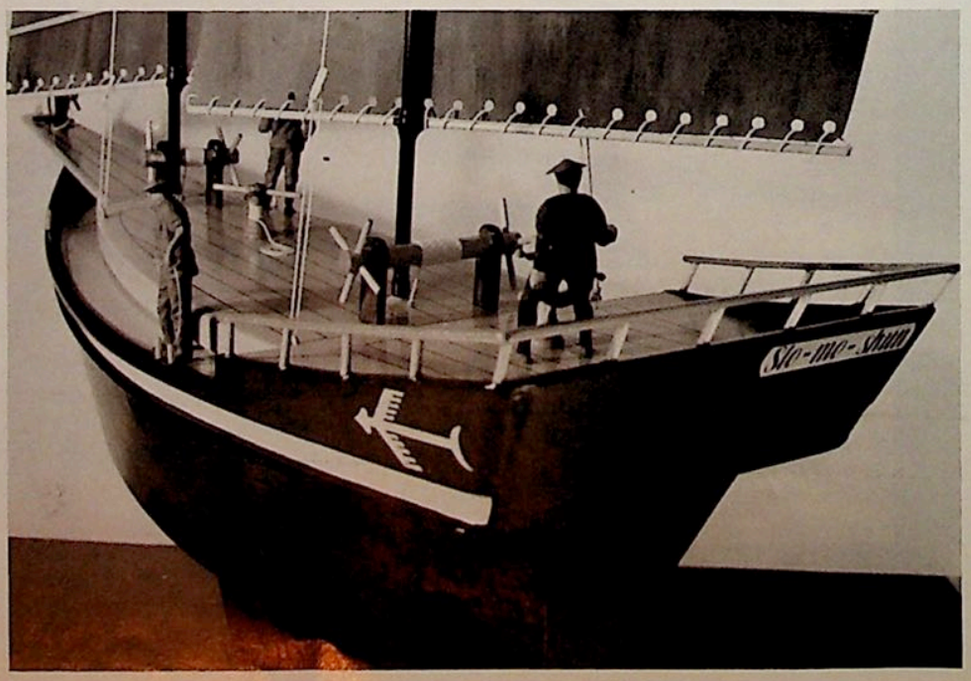
6. Cut the two 1/8-in. sq. chine strips from 1/8-in. balsa sheet. Mark from the plan the positions of the chines on each side of the stem and cut a slot on each side. Cut the chines a little longer than required; taper the inside of the forward ends and cement each chine into the frame slots, starting at the stem and working aft. Hold with pins until set. Cut out the bow fillets from 1/8-in. balsa and cement between the chines and stem for support.

7. Trim the chines flush with the transom and fair in with a razor plane and file the bottom and sides. Bevel each side of the keel and stem to a point to ensure a good fit for the card sheeting.

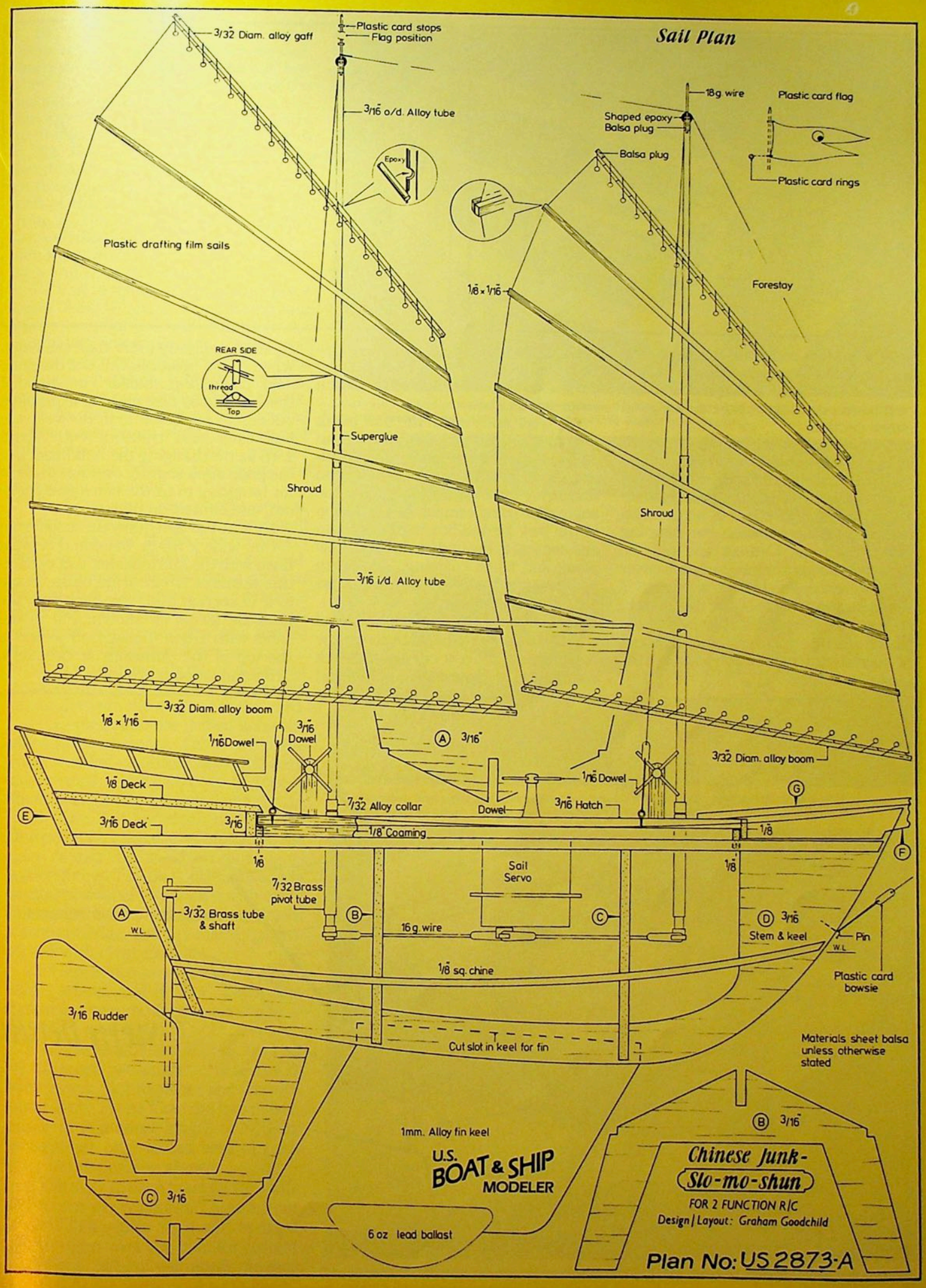
8. Trace the hull templates onto stiff paper for correct shape and fit before cutting them out from 1mm. thick card.

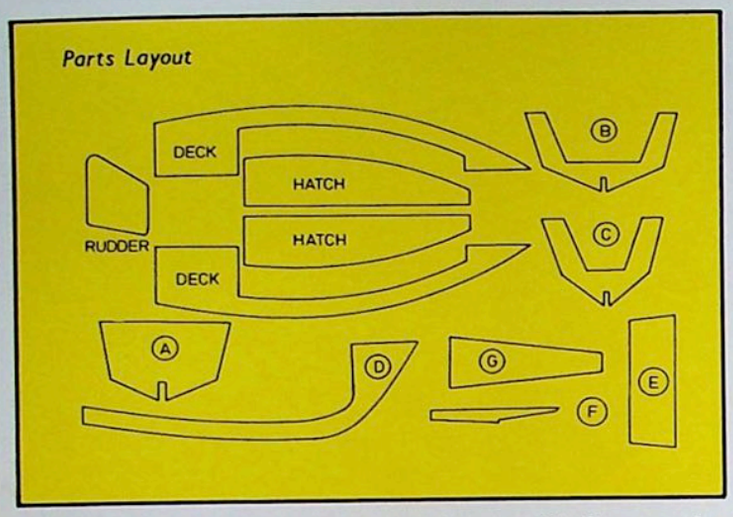
9. Cement the hull bottom halves first, starting at the stern and cementing and pinching towards the bow, followed by the sides, again holding with pins until set.

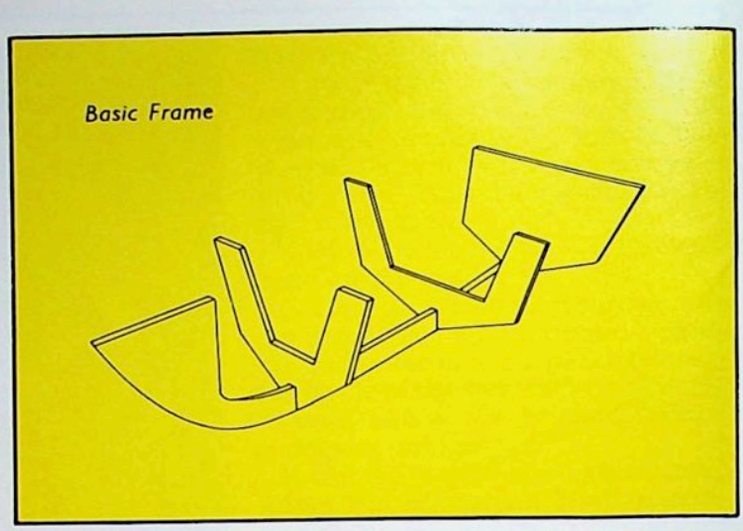
10. Trace and cut out the poop deck back E from 3/16-in. balsa and cement to the stern between the hull sides. Trim



A model "Character Boat" in every sense of the word, this little cutie will attract attention wherever it appears . . in action or not.


Sail Plan
3/32" Diam. alloy gaff
Plastic card stops
Flag position
3/16" o/d. Alloy tube
Epoxy
18g wire
Plastic card flag
Shaped epoxy
Balsa plug
Balsa plug
Plastic card rings
Plastic drafting film sails
1/8" x 1/16"
Forestay
REAR SIDE
thread
Top
Superglue
Shroud
Shroud
3/16" i/d. Alloy tube
3/32" Diam. alloy boom
1/8" x 1/16"
1/16" Dowel
3/16" Dowel
A 3/16"
3/32" Diam. alloy boom
1/8" Deck
1/16" Dowel
G
E
3/16" Deck
3/16"
7/32" Alloy collar
Dowel
3/16" Hatch
1/8" Coaming
1/8"
F
1/8"
1/8"
Sail Servo
7/32" Brass pivot tube
A
3/32" Brass tube & shaft
B
C
D 3/16"
Stem & keel
Pin
W.L.
W.L.
16g wire
1/8" sq. chine
Plastic card bowsie
3/16" Rudder
Cut slot in keel for fin
Materials sheet balsa unless otherwise stated
1mm. Alloy fin keel
B 3/16"
U.S. BOAT & SHIP MODELER
Chinese Junk-
Sio-mo-shun
FOR 2 FUNCTION R/C
Design/Layout: Graham Goodchild
C 3/16"
6 oz lead ballast
Plan No: US 2873-A





off the bottom and top to the same rake as the sides. Also trim off any excess card if necessary and smooth round with a file the chine corners, keel, and stern section.

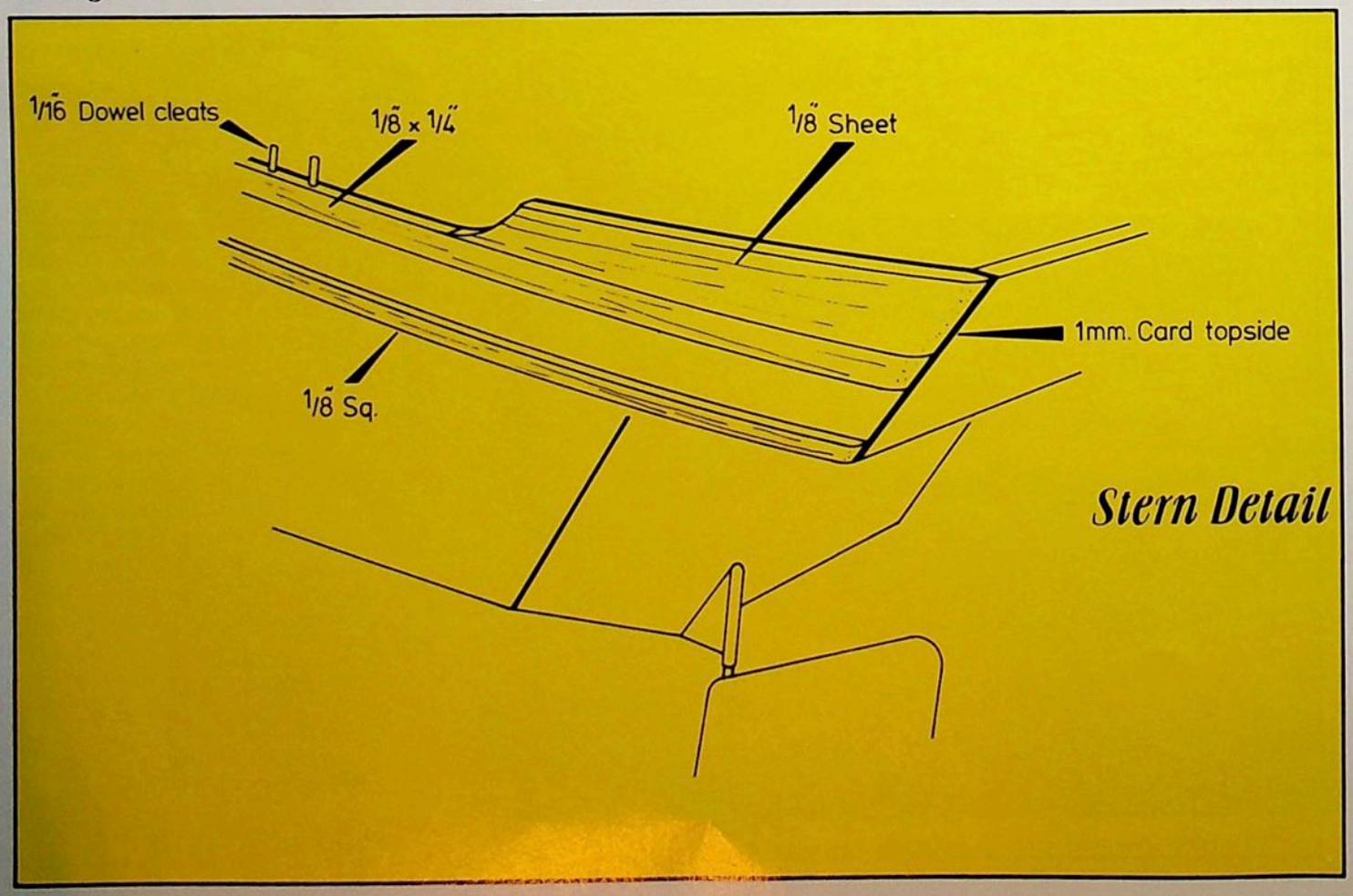
11. Cut out the deck and hatch coamings from strips of 3/8-in. wide x 1/8-in. balsa. Cement the deck coamings to the inside edge of the deck opening, holding in place with strips of scrap balsa wedged across between the coaming faces until set. Cement and pin the coaming strips around the hatch cover with the exception of the rear edge (this edge is held in place under the forward edge of the poop deck.) Check that the hatch fits over the deck coamings and if necessary, trim down the sides of the coamings.

12. Trace and cut out the mast support stiffener from 3/16-in. balsa and cement to the underside of the hatch cover where shown.

13. Trace and cut out the bow plank G from 1/8-in. balsa and bracing F from 3/16-in. balsa. With the hatch in position, bevel the rear edge of the plank to fit onto the front edge of the hatch at the angle shown and cement. Notch the top of the bow for the bracing to slip into and cement to the underside of the bow plank and hatch coaming. The hatch and bow plank can now be lifted off as a complete assembly.

14. Cut out the poop deck bulkhead from 3/16-in. balsa and glue across the deck against the rear edge of the deck coaming. The height of the bulkhead should be slightly more than the hatch when it is in position. Cut out the poop deck from 1/8-in. balsa. The shape of this is made by first making a template out of stiff paper cut to fit between the hull sides and transom with about 1/16-in. overhanging the bulkhead. Cut the poop deck slightly oversize to allow for bevelling to fit the sides and transom, and cement in place.

15. Cut the two gunwale strips from 1/4-in. wide x 1/8-in. balsa and cement flush with the hull topsides. Cut two further strips of 1/8-in. wide balsa; shape to a D section and cement below the gunwale strips as shown. Fill in the sides with 1/8-in. balsa, butt-joined to the top of the gunwales at the stern. Trim and smooth around edges



16. Trace and cut out the fin keel from 1mm. alloy sheet and epoxy centrally into a pre-cut slot in the hull bottom. Epoxy the lead ballast along the bottom edge after first cutting a slot along the top of the lead for the fin keel to fit into. Round smooth all edges with a file. Cut the rudder shaft tube to length and epoxy into a pre-drilled hole in the transom against the protruding end of the keel. Cut the rudder shaft from 3/32-in. brass tube and epoxy into a pre-drilled hole in the top of the rudder. Remove excess epoxy before it fully sets and smooth down.

17. Cut to length the two mast pivot tubes from 7/32-in. brass tubing and epoxy through pre-drilled holes in the hatch top where shown. Check that they are correctly aligned by inserting a length of 3/16-in. tube and squaring up vertically on all sides with the deck.

18. Screw in the shroud and forestay screw eyes where shown and secure with dabs of epoxy glue. Bend a pin for the bow plank bobstay attachment and epoxy into the bow.

19. Construct the windlasses as shown from scrap balsa, dowel, and wooden cocktail sticks, but do not cement in place until the hull is painted.

20. Smooth down the balsa parts of the hull and apply two coats of cellulose clear dope to seal the balsa and card structure. Again smooth down and fill any gaps or blemishes where necessary. Apply two further coats of dope and again lightly smooth down, taking care not to damage the surface of the card.

21. Cement into pre-drilled holes the stern rail and cleats. These are made from wooden cocktail sticks and hard grade balsa. Apply two coats of dope to these and lightly smooth down.

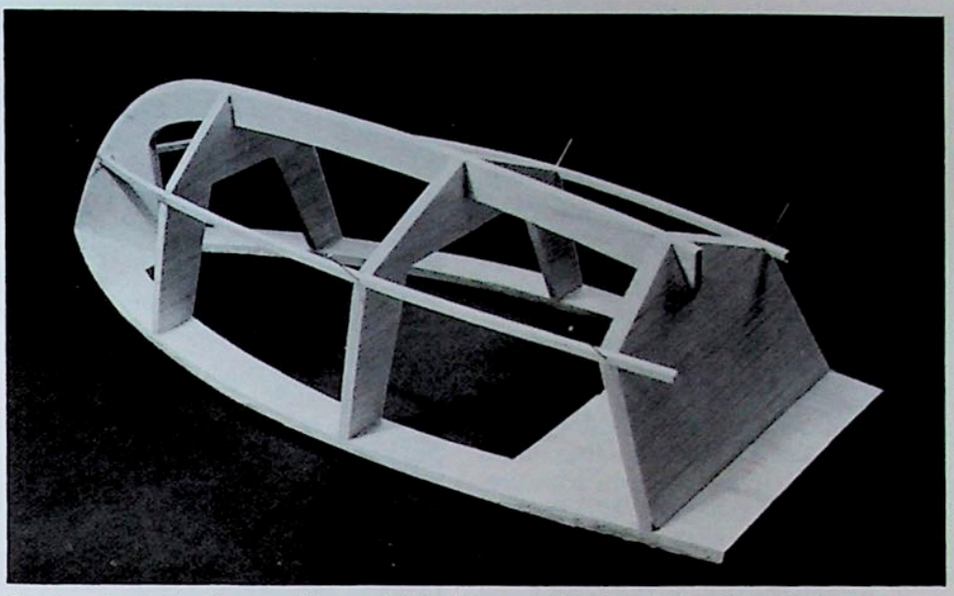
22. The hull and deck can now be finished with two coats of enamel to the color of your choice, which should give a good finish. The deck planking on the prototype model was shown with black ink applied with a ruling pen aided with a straight edge, and the markings protected with clear varnish.

23. Glue in position the deck fittings, ship's wheel, and anchor. These last two items were bought ready-made.

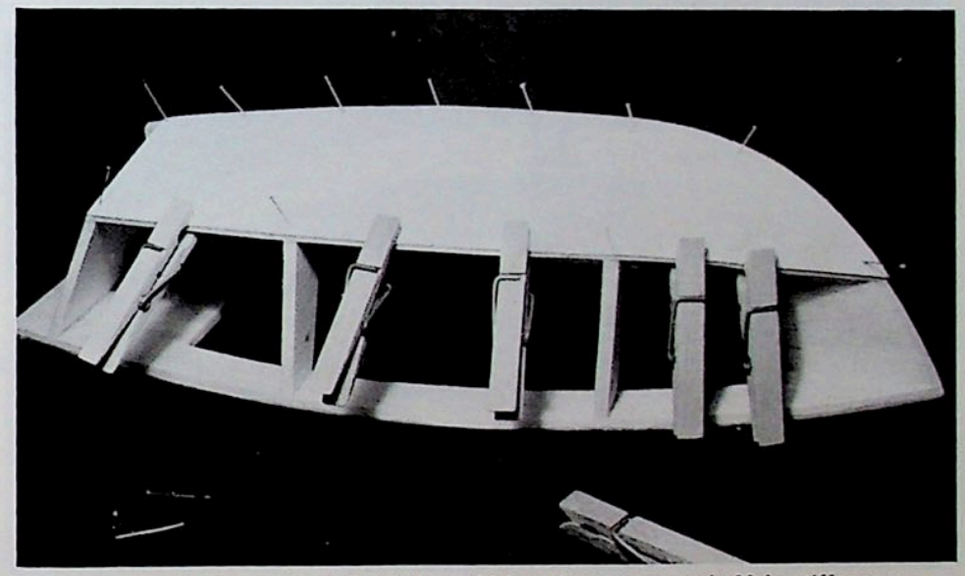
MASTS and SAILS

1. Cut to length two 3/16-in. O.D. alloy tubes and two lengths of 3/16-in. I.D. alloy tubes. Slot together and fix with super glue. These form the two masts. Super glue a short length of 7/32-in. brass tube collar to the base of each mast in the position shown.

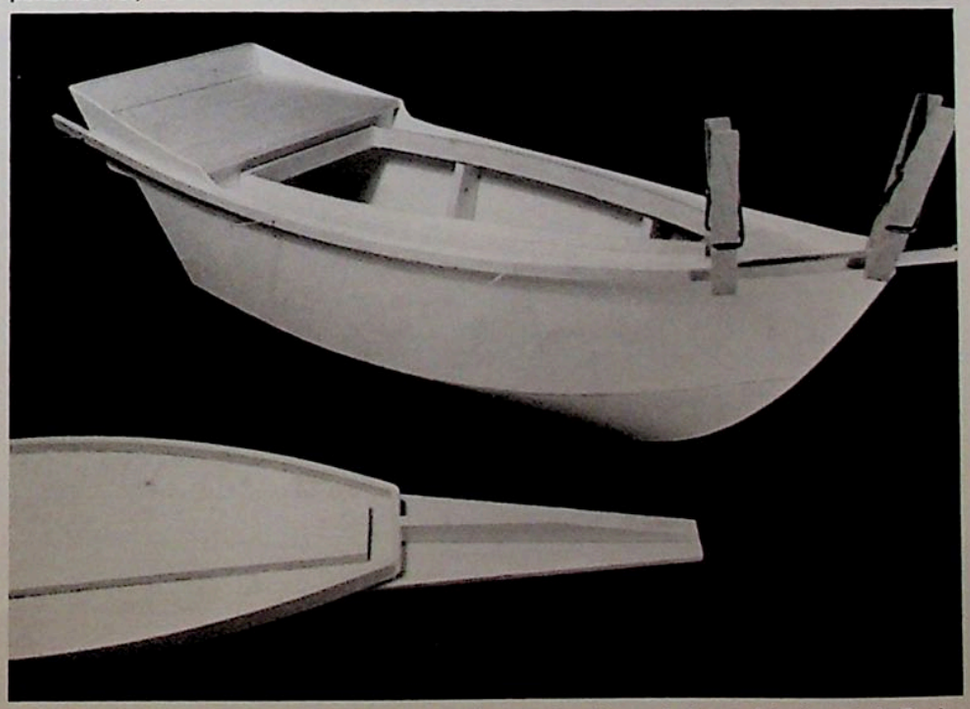
2. File slots in each mast for the gaffs and booms where shown. These are cut from 3/32-in. alloy tube and epoxied into the slots over the plan for correct alignment. When set, apply further epoxy over the joints so they are com-



Construction begins by assembling and gluing frames and keel to deck, using a flat building surface. Bevel frames, chines, keel, and deck to accept hull sheeting.



Hull bottoms and sides are sheeted with 1mm-thick card or poster stock. Make stiff paper patterns first, to check for correct fit before cutting card material. Scissors will do it.



The starboard gunwhale strip is being glued in place, using pins and clamps (clothespins). Deck and hatch coaming are carefully fitted for a snug fit.

pletely encased, and then file round to form a knuckle.

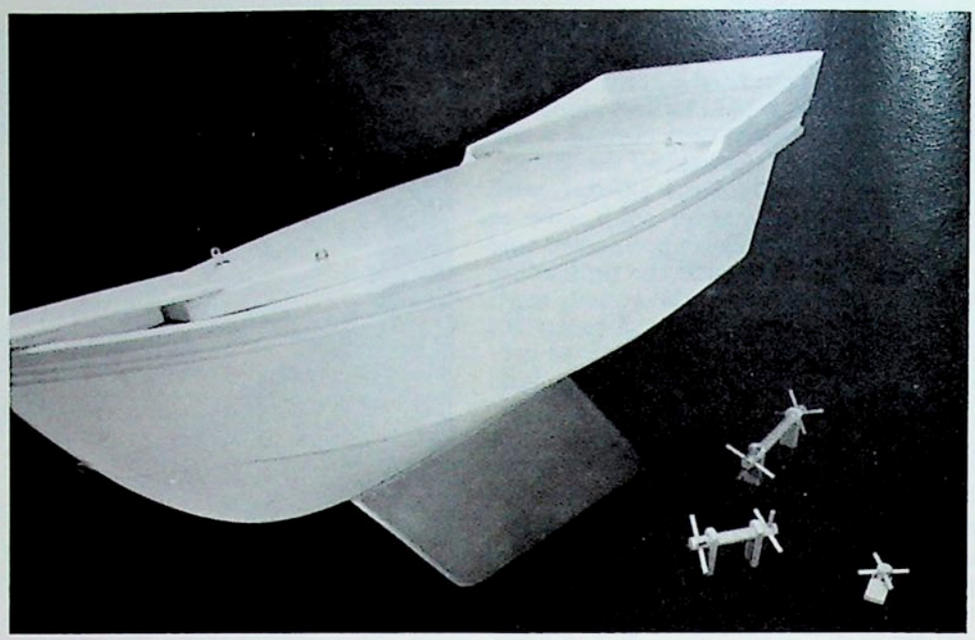
3. Cut the mast tips from 18g. wire and epoxy into balsa plugs pushed into the top of each mast. When set, file the epoxy to shape as shown. The two mast assemblies can now be painted down as far as the collars.

4. Trace and cut out the sails from thin plastic drafting film and punch holes along the top and bottom edges for attachment to the booms and gaffs.

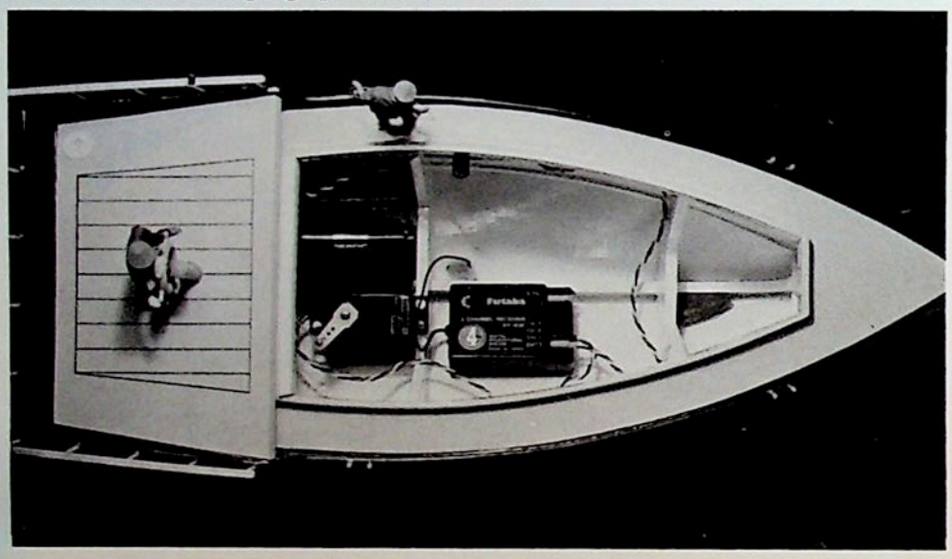
5. Paint the sails light brown and dab on patches of dark brown and white to produce a weathered effect. I suggest matt enamel paints be used for this.

6. Cut the sail battens from hard grade 1/8 x 1/16-in. balsa which are predoped to seal the grain and contact glued on each side of the sails where shown.

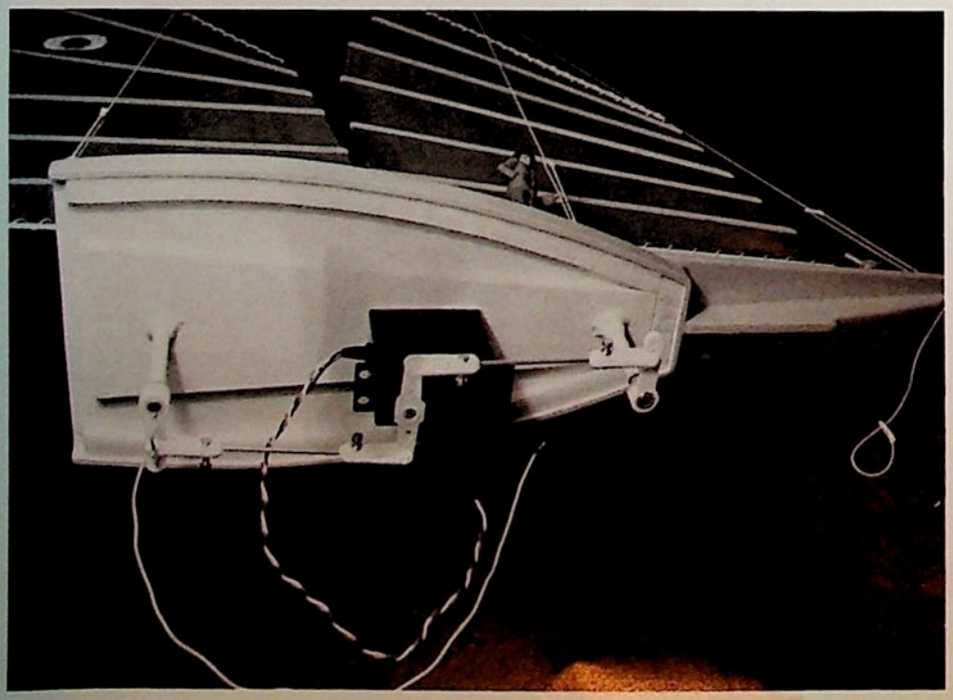
7. Attach the sails to the booms and gaffs with polyester yarn; fastened at the ends with balsa plugs pushed into the ends of the boom and gaff tubes, and glued over.



Completed hull, removable hatch lid, keel, and windlasses, ready for final finish and painting.



Overhead view with hatch removed, showing neat and simple radio installation. Note interior location of radio switch on port side, also a bit of ballast up forward.



Underside of hatch cover, showing foam seal, also installation of mast socket tubes, swivels, control horns, and servo that rotates both masts for various points of sailing.

8. Secure the sail battens to the masts with loops of yarn punched into each batten (a small watchmakers type screwdriver is ideal for punching the yarn into the battens), and secured with a drop of glue.

9. Insert the completed mast and sail assembles into the deck pivot tubes and attach a control crank to the base of each mast. These should be a snug push fit, just enough to allow slippage to prevent damage to the servo. Double-stick tape the sail servo centrally to the underside of the hatch and connect up to the sail cranks with 16g. wire and four screw-on type clevises.

10. Loop the shrouds and forestay over the mast tops. . .down through the deck screw eyes and fasten with bowsies cut and drilled from suitable thickness plastic card. Tie the bobstay to the bow plank screw eye and attach a bowsie to the remaining end. This secures the hatch with sail assembly when looped over the bow pin and tentioned. Apply a drop of glue to all the knots to prevent any slippage.

11. Trace and cut out the flag from thin plastic card and glue on the attachment rings as shown. . .paint and secure to the wire mast top with plastic stop rings.

12. The Chinese crew figures shown on the model were modified from standard two-inch high farm hands, and suitably painted. The coolie type hats were made from thin plastic card, cut into circles and then glued cone shaped to the heads.

RADIO INSTALLATION

Tape the rudder servo to the starboard side of the keel and against the aft side of frame B. Insert the rudder

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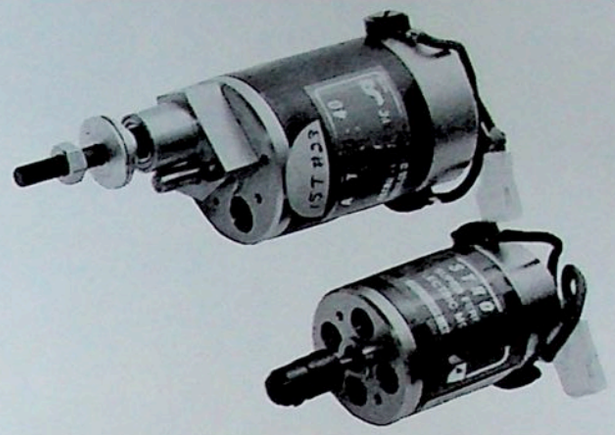

ASTRO DIRECT DRIVE MARINE MOTORS come with a 3/16 drive coupling and are designed for fast planing hulls like the Prather Deep Vee and the Dumas Donzi. For best results, these fast high power boats should be powered by Nicad batteries. Nicads can be fast charged in only 15 minutes with the ASTRO DC/DC SUPER CHARGER.

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ASTRO DIRECT DRIVE MOTORS

MOTOR	BATTERY	PROP	RPM	PRICE
Astro 10	6 Cells	1.10"	9000	$59.95
Astro 15	12 Cells	1.25"	12000	$64.95
Astro 25	14 Cells	1.50"	9000	$74.95
Astro 40	18 Cells	1.75"	12000	$89.95

ASTRO GEARED MARINE MOTORS

MOTOR	BATTERY	PROP	RPM	PRICE
Astro 10G	6V gel	2.00"	4000	$ 84.95
Astro 15G	12V gel	2.25"	5000	$ 89.95
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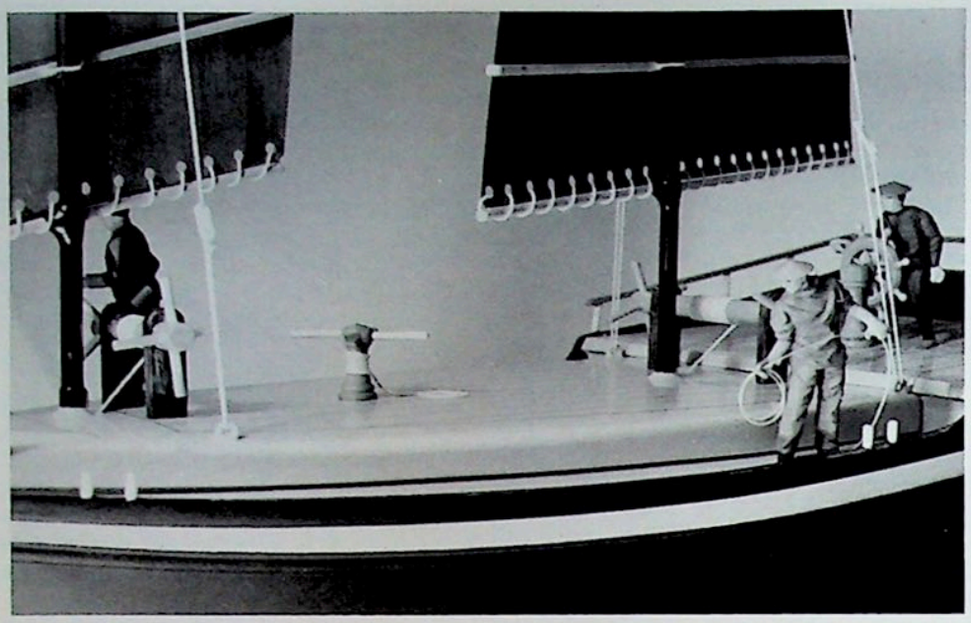
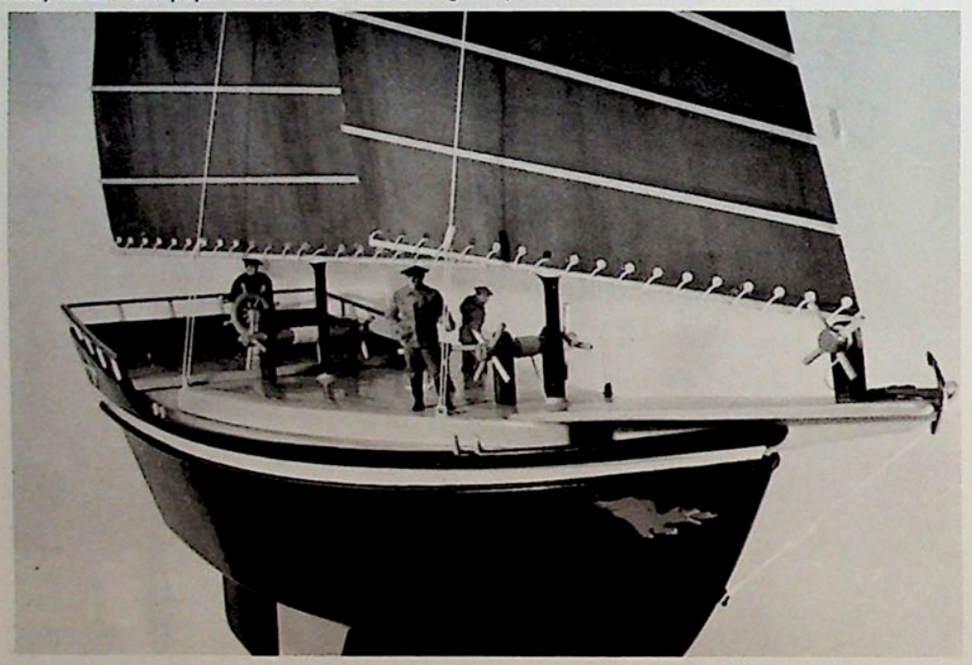


"Whaddya say guys, is it Miller time?" Crew are two-inch farmhand figures, with coolie-type hats, made from paper discs. Sails are drafting film, weathered with brown stain.



Masts and spars are aluminum tube, with balsa battens to stiffen sails. Card stock hull planking is easy to cut and apply. Paint will waterproof it.

with a drop of oil on the shaft and attach a control crank. Connect up with 16g. wire to the servo horn with the ends bent over and retained with blobs of solder. Note that the remaining three arms of the servo horn have been removed to prevent fouling of the sail crank when the hatch is closed.

Remembering its full length if you wish to replace it later, cut short the antenna wire attached to the receiver and wedge the exposed end between the base of the rear mast tube and control crank. The mast itself will then double as the antenna and so avoid the need for an unsightly wire.

Mount the receiver and batteries to the hull bottom with double-stick tape where shown, with the switch taped under the port side deck. A small amount of additional lead ballast may be required in the bow as shown to trim the model.

Check the operation of the sails with the radio switched on. Movement should be the maximum of the servo travel without the sails fouling the shrouds. Individual sail adjustment can be made by altering the positions of the screw type clevises, or by twisting the sail cranks around on the masts.

Before setting off to the local pond, make sure the hatch is made watertight as far as possible. Strips of self adhesive foam, the type used for draftproofing windows and doors, is ideal, and is stuck around the underside edge of the hatch with a further strip stuck along the rear inside edge of the hatch coaming.

The model performs best in a gentle steady breeze, and with its infinitely variable sail setting capability, the model can even be sailed backwards. . . ah-so.

Materials

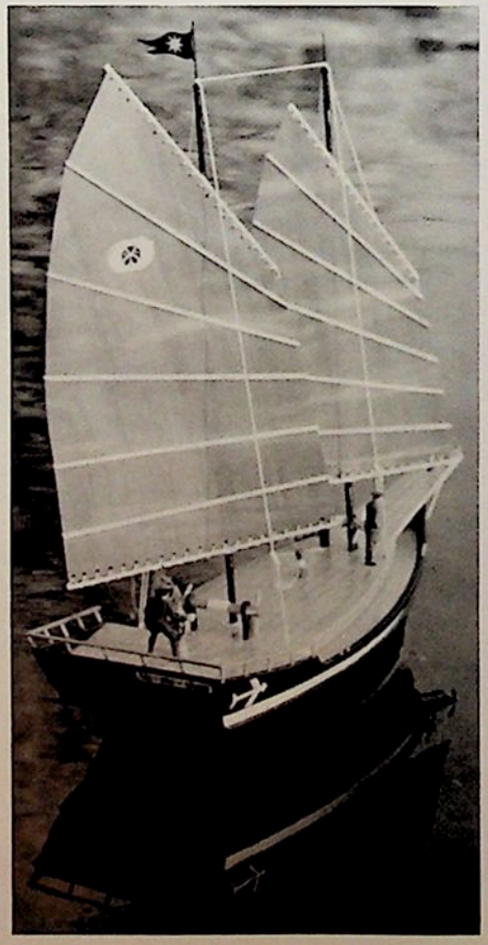
Hull:
1 sheet 4 x 3/16-in. balsa
1 sheet 3 x 3/16-in. balsa
1 sheet 3 x 1/8-in. balsa
1 sheet 1mm art card

Fin keel:
1mm allum. alloy
6 oz. Lead ballast

Masts, spars and rudder shaft:
2 No. 3/16-in. O.D. alloy tube
2 No. 3/16-in. I.D. alloy tube
1 No. 7/32-in. brass tube
4 No. 3/32-in. alloy tube
1 No. 3/32-in. I.D. and O.D. brass tube

Sails:
Plastic drafting film
1 sheet 3 x 1/16-in. balsa (battens)

Hardware and fittings:
16 g. piano wire (linkage)
18 g. piano wire (mast tops)
3/16-in. dowel
Cocktail sticks
3 No. nylon cranks
4 No. screw type clevises
5 No. mini brass screweyes
Scrap plastic card, polyester yarn ship's wheel, anchor, and two-inch tall plastic figures.
Two function radio with 2 No. mini or standard servos. •



Great for small ponds, swimming pools, etc., and cute as a bug's ear!

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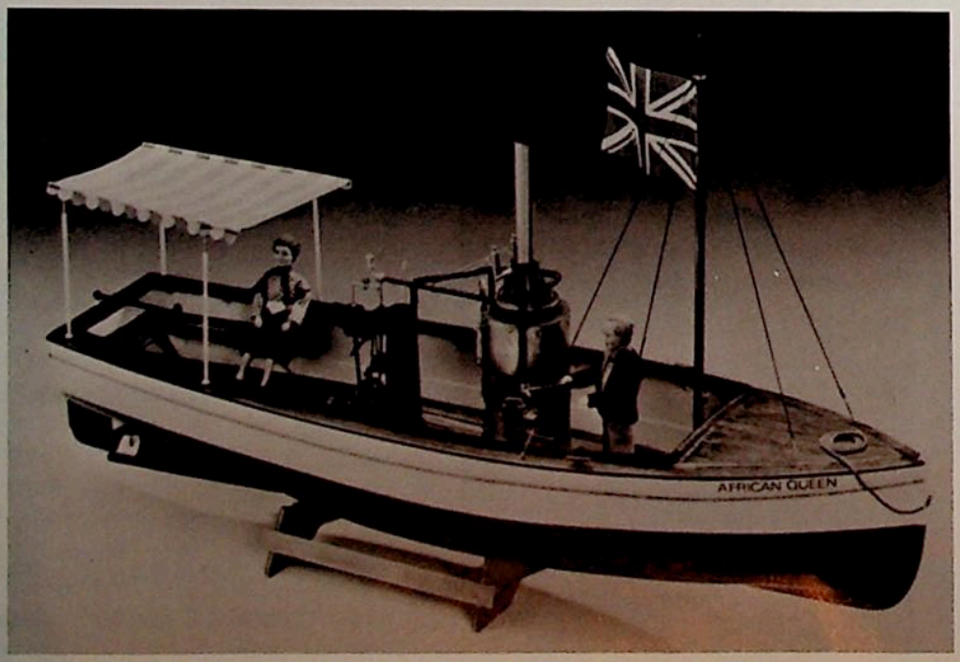
The "Fast-Cat" electric catamaran tunnel from MRP.

The Self Riting Multihull Manufacturing Company Inc., which produces the clever Pop Up R/C catamaran, now offers a new one-design, "non-popping up" 36/600 monohull sailing yacht. The hull is two layers of 6-ounce fiberglass finished in a glossy off-white gel coat, and the deck is 1/64 ply stained mahogany. The very high aspect ratio sails are 1/2-ounce mylar, and the booms and mast head crane are 1/4-inch O.D. fiberglass tubing. Complete kit sells for about $225. Write to the company at 27 Emerson Ave., Amityville, N.Y. 11701, or call (516) 842-9309, and be sure to tell Herman that U.S.B.S.M sent you...

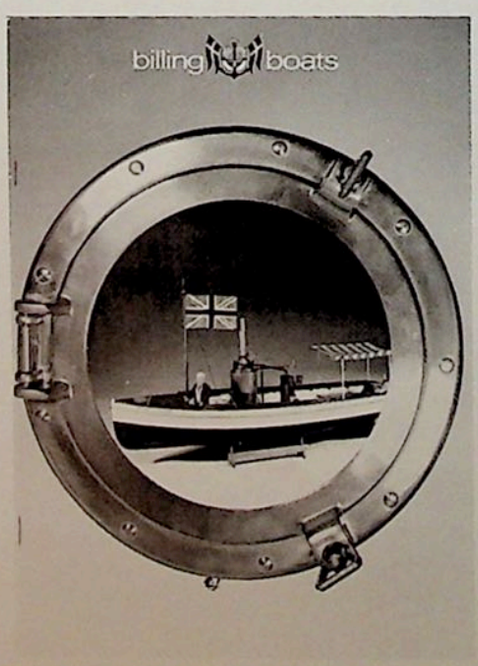
Are you still scratching your head about that pop up catamaran? We haven't had a chance to talk with Hobie Alter about this one, but he should investigate the possibilities (Hobie created the world-famous Hobie-Cat series of racing catamaran sailboats). In case you aren't aware, S.R.M.M.C.I. manufactures and markets a self-righting R/C catamaran sailboat model that is 48 inches long and carries from 1000 to 1500 sq. inches of sail. If the boat should capsize, it can be righted *BY RADIO CONTROL*, without laying a hand on the boat! When it capsizes, a mast head float prevents it from completely "turning turtle." A drum winch is rigged to the mast side stays in such a way that with radio control the winch will pay out line to the high hull and at the same time, haul in on the stay to the low hull. When it has gone far enough, the high and dry hull drops back in the water and the mast pulls out of the water. Finally, the mast is winched back to perpendicular, and off you go! You have to see it to believe it, and U.S.B.S.M. has seen it . . . and believes it!

S.R.M.M.C.I. has just added another item to its plentiful list of R/C sailboat accessories. It's a variable torque servo winch arm that is said to work well in a 36-inch sailboat. By adjusting the

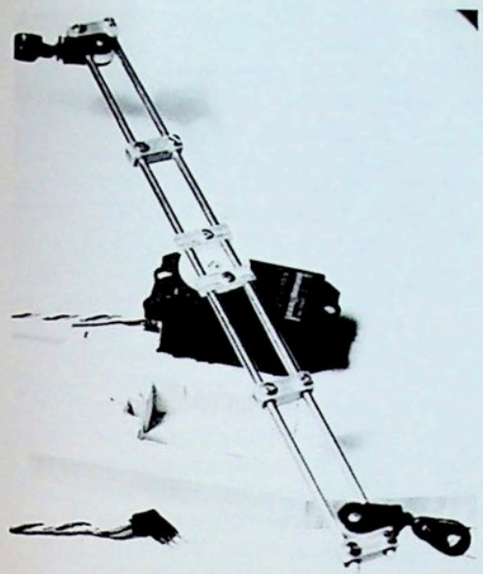
The MRP electric powered luxury cruiser "Italia."



Billing Boats "African Queen" kit available from Altech Marketing.



Billing Boats catalog from Altech Marketing.

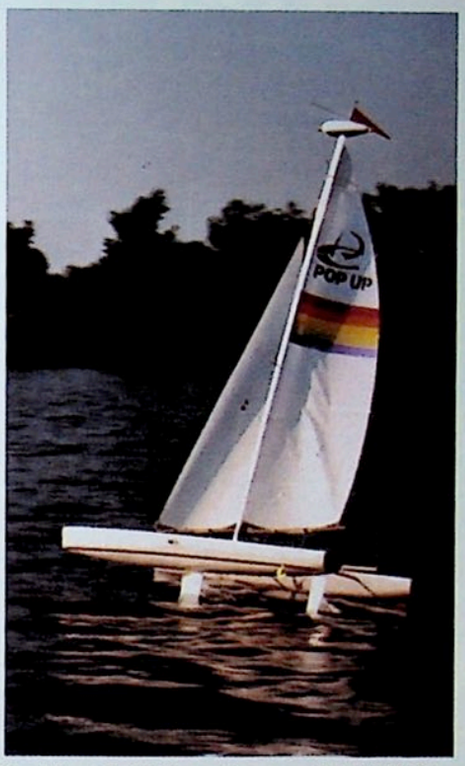


Sail servo winch arm by S.R.M.M.C.I.

positions of the cross clamps on the two long arms, the leverage of the winch arm can be varied, and as it rotates, the leverage actually changes by itself at certain degrees of rotation of the arm (see photo). Contact the company for further information on this accessory item.

* * *

Aeromarine Laminates, Inc., 77 Cedar Street, Babylon, N.Y. 11702, announces its new 1987 Catalog. . .28 pages detailing its selection of fiberglass hulls; catamarans, Deep-Vee's, Unlimiteds, and outboards. Other pages include specialty hardware items, decal sheets, radio boxes, and precision tools of interest to the boating modeler. The price is $3.00, and be sure to tell them where you read about it.



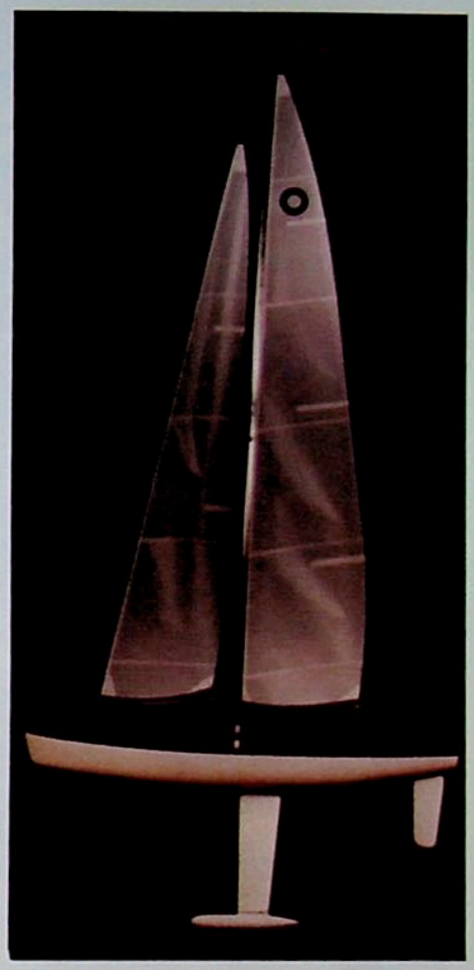
Pop-Up self-righting catamaran, S.R.M.M.C.I.

* * *

Altech Marketing has a new, color catalog of Billings Boats kits which it has available. There are 60 pages full of color photographs of just about any type of boat model you could want. You'll find well-known vessels, such as the "Bounty," the "Cutty Sark," and even the "African Queen." There's a French fishing schooner, a Danish guard ship, and many others. Each one is rated according to level of building difficulty. Order the Billings Boats catalog for $2.00 from Altech at Box 286, Fords, New Jersey 08863.

* * *

Speaking of the "African Queen," made famous by Humphrey and Katherine in the movie of the same name, the actual boat was built in Africa in 1910 by a railroad company during the construction of a river bridge. After the movie, it eventually ended up in Florida (obviously they didn't blow it up with the torpedo that sank the German



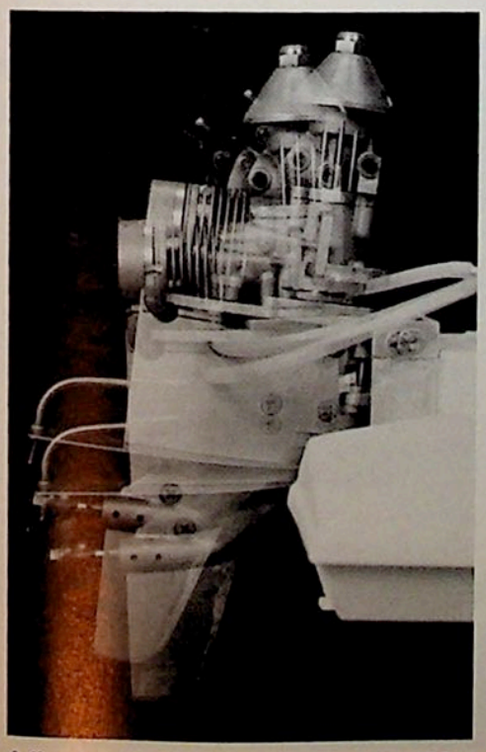
New 36/600 mono-hull by S.R.M.M.C.I.

river patrol boat), was restored by its new owner, and continues to chug around, to the delight of its passengers and onlookers.

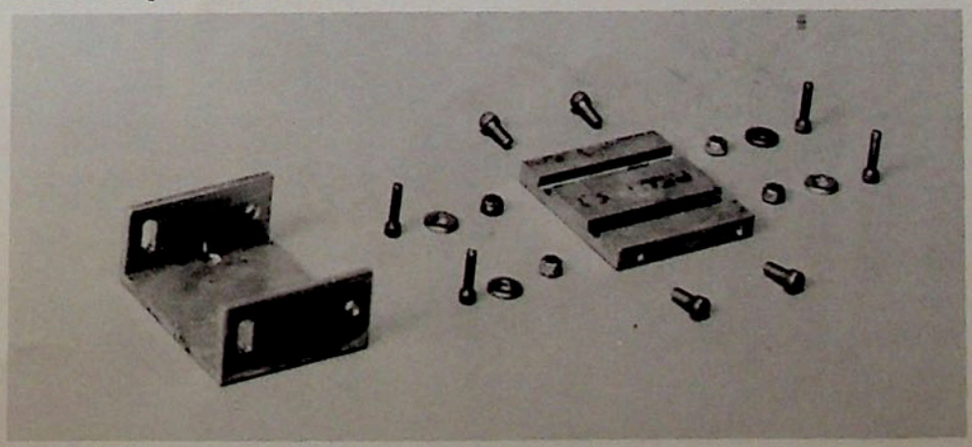
Billings has recreated the Queen in 1/12 scale, which comes out a little over 29 inches long. There's plenty of detail, with internal planking, non-working replica steam engine, and rear canopy. Add an electric motor and radio control, so the next time you find yourself up the river without a paddle, you can just sit back and enjoy running your "African Queen!"

* * *

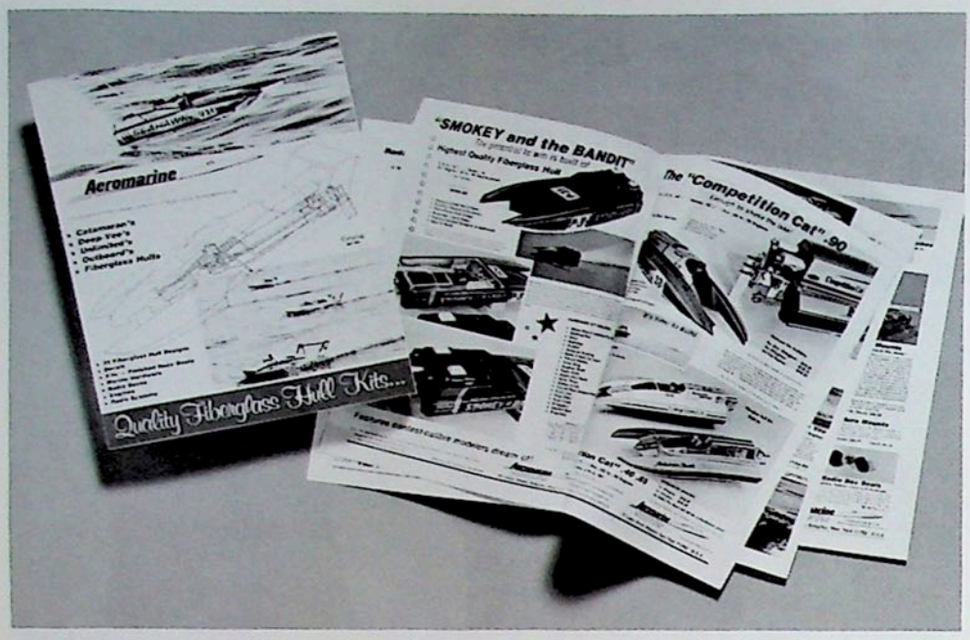
Model Racing Products, Inc. (MRP), 18676 142 Ave. N.E., Woodinville, WA 98072, now offers adjustable outboard



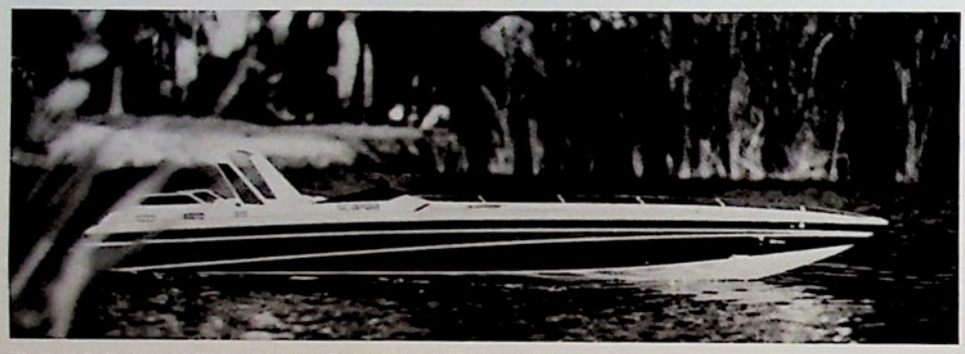
Adjustable outboard engine mount by MRP.



Exploded parts view of MRP adjustable outboard motor mount.



New catalog from Aeromarine Laminates.



Wellcraft Scarab 388 by Dumas Products is 55 inches long.

motor mounts for the K&B 3.5, 7.5 and 11cc outboards. These allow trimming the angle of the outboard, one of the most important aspects of obtaining the optimum running trim for any boat.

MRP also has two new electric powered boats; the "Italia" and the "Fast-Cat." The Italia, as you might suspect from the name, is a high speed luxury motor yacht in European style. A 540 electric motor and 6-volt battery supply the go-power. Full color decals provide realism and detail. The boat model is available in three kit forms. The ready-to-run version is completely assembled, with a two-channel, pistol-grip radio, motor, battery pack, and charge cord. Add eight AA cells to the radio, stir well, and go boating! The deluxe kit is the same as the RTR, less radio. Finally, the basic kit is unassembled, but includes all hardware. Add your own radio, charger, battery pack, motor, and speed control. Check your local hobby or contact MRP for the nearest source.

The Fast-Cat is just that. . .a high speed, off-shore, catamaran tunnel. This lightweight ABS electric boat uses twin 540 motors and two 6-volt, five-cell battery packs, but has room for six or 7-cell packs. With batteries in parallel, you get outstanding performance and run time. With the batteries in series (double the voltage, but less capacity) the speed for an electric is hard to believe! The Fast-Cat is available in the same three kit styles as the Italia; ready to run, ready for radio, and ready to build! Check 'em all out at your dealer, and if he doesn't have 'em, contact MRP and tell them USBSM sent you.

* * *

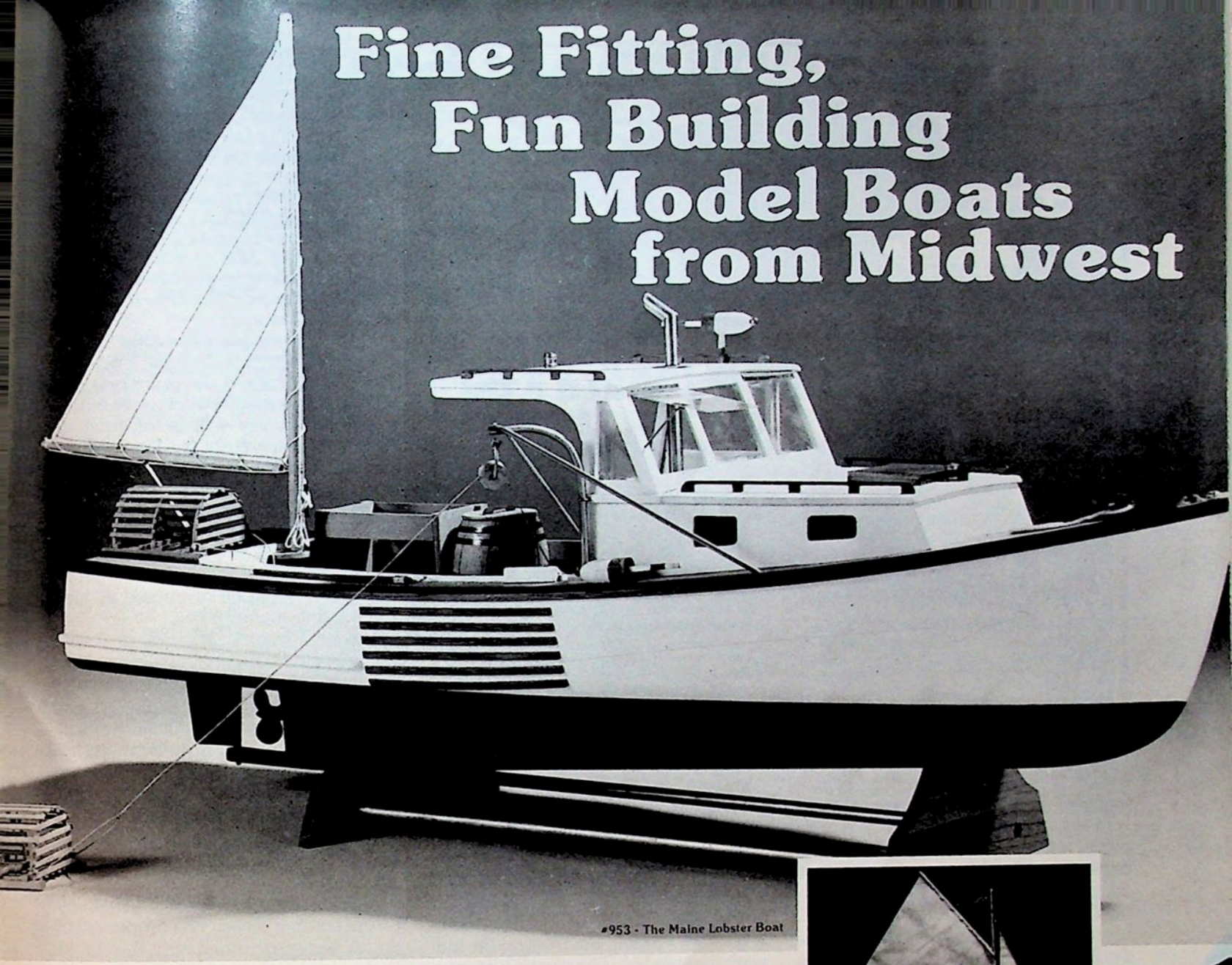
Definitely not designed to run in your jacuzi is the Wellcraft Scarab 388 from Dumas Products, 909 E. 17th, Tucson, AZ 85719. The Scarab is 55 inches long, with a 14-1/4-inch beam, and is designed to take a .60 to .90 engine, or even a twin engine installation. The hull is hand laid-up fiberglass, with a white gel coat finish. Hull and deck are joined at the factory for easy completion.

* * *

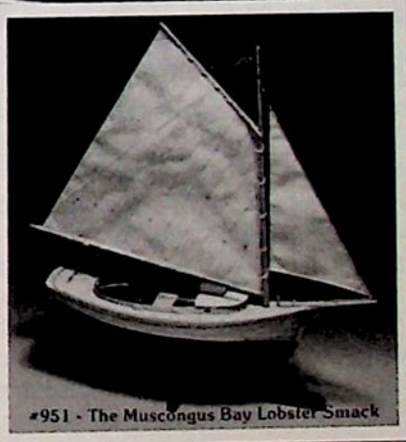
Continued on page 71

The "Wasserschutzpolizei" 1/25-scale boat by Robbe Model Sport.

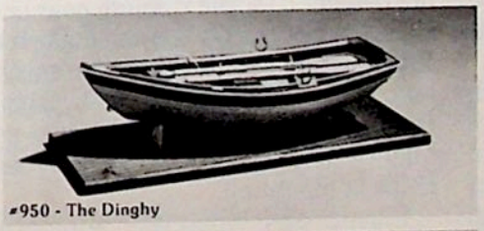
Fine Fitting, Fun Building Model Boats from Midwest



#953 - The Maine Lobster Boat



#951 - The Muscongus Bay Lobster Smack



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Build one . . . Just for the Fun of it.

Fun instead of frustrations. That's what you'll get with any of Midwest's fine model boat kits. Clear, full-size plans, easy-to-follow instruction booklets, and Micro-Cut Quality® wood parts that fit great! These kits are built with fast-drying, modern adhesives, and feature the exclusive "simplified plank-on-frame" construction that closely parallels full-scale boat construction. And all of our kits include a complete fitting set, so that you can build a display model you'll be proud of.

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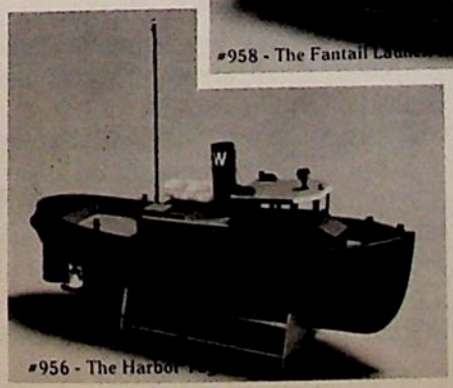
Our fleet of kits includes one that's right for you, whether you're a beginner or an advanced modeler. No matter which you choose, it will be the best value your money can buy. Ask your dealer today!



#956 - The Harbor Tug

Midwest Products Co., Inc.
400 South Indiana St. • P.O. Box 564 • Hobart, IN 46342 • (219) 942-1134

Yes! Please send me your complete boat catalog. Enclosed is $2.00 for shipping & handling.

Name _____

Address _____

City, State, Zip _____

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#8-84-204

Plastic (GRP). Everything, except the motors and radio control gear is usually included. Premade sails of natural and synthetic fibers are often included in sailboat kits. The more gear included, the less "search and secure" on the part of the modeler and, of course, the higher the price. Selection and the availability of spending money is sometimes the only restriction of uncontrolled desire. It is a shame that talent is not available in the same manner.

Kits are also available for just the hull and deck fittings. They do make attractive static models. You may, if you wish, convert your static version to movement by simply restructuring (customizing) the interior and adding the working gear.

The sailing yacht devotee can select his version from several fiberglass, GRP, and heavy styrene vacuum-formed plastic hulls. American manufacturers, such as, Dumas Boats, of Tucson, Arizona, and the prime contender from Europe, Robbe, offer excellent examples of R/C boat kits.

These companies, as well as several others, not only offer the kits but also a wide selection of operating gear. Options to become an elaborate vessel are offered. A bottomless purse will allow the radio control enthusiast to add sound, working lights, moving figures, and anything that can be radio controlled. Providing you have enough channels, the possibilities are endless.

There are large-scaled, plastic-hulled, static models offered as kits that can be used for action models. Here is a static model that can be converted to a working version. Reinforcing the hull is recommended. The plastic kits were not designed for the running gear or to install radio control. You can make it an R/C version with a little customizing and watertight construction. Again, these kits can vary in completeness and quality. The selection of these types of ships is unlimited.

Plastic and fiberglass submarine hulls are becoming quite popular. These "working models" are constructed by the enthusiast who wants a true-to-life submerging model. The models are most often elaborate radio controlled versions. Components must be watertight. There is a high mortality in this form of ship modeling, usually due to small errors of overlooked construction.

The modeler who wishes to fabricate, or is not able to find the manufactured plastic hull of the ship he wishes to build, still has a choice. He can prepare a mold and build a fiberglass hull. There are three basic methods; (a) the negative mold, (b) the positive mold, and (c) the combination of both, should internal and external structure details molded into the surface be needed. This is a subject unto itself and will not be discussed in any detail at this time. It is, however, not a difficult method and is gaining in popularity.

Recommended reading should you wish to construct your own fiberglass hull are the texts that follow: *Building Fiberglass Ship Models from Scratch*, by Richard V. Humphrey, Tab Books; and *The Glassfiber Handbook*, by R. H. Warring, Argus Books.

There are many books on the subject of forming and working with plastics. The two mentioned above are best suited for ship model builders. A trip to your local library will be of great assistance if you are not familiar with the media. Learn this one carefully. You will be dealing with dangerous components.

While this presentation is only the tip of the iceberg when it comes to the subject of hulls and how to build them, we will at a later time go into greater detail. The subject will be discussed as time and need demand.

The next installment will deal with the subject of scale model fittings. How to make them, should you be unable to secure them commercially, will be touched on. Materials and the best suited uses of selected workable materials will be discussed. Sources of commercial premade and proper-scaled fittings will be revealed. •

Jomarine . . . . *Continued from page 15*

LocTite on the set screw will help keep it from coming loose. The proper cable length was determined with the thrust washer in place leaving about 1/32 inch clearance between the washer and strut. The cable was cut and the end soldered to prevent fraying when clamped by the collet.

The rudder was mounted approximately where shown on the plans, using 6-32 blind nuts. The trim tabs, made of brass, and the anti-skid fin, made of aluminum, were screwed to the transom with #4 x 1/2-inch sheet metal screws. With the K&B 7.5cc marine engine in place, it was possible to determine where the Prather 7.5 tuned pipe would come out the back of the boat. The pipe was positioned as high as possible to clear the radio box, but still remain inside the hull. A hatch cover with drivers is planned so the boat can be raced in the offshore class. A one-inch hole saw was used to cut the opening for the tuned pipe in the transom.

The water cooled header pipe connecting the engine and the tuned pipe is homemade. The pipe length was cut to 9-3/4 inches from the engine to the

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L.O.A.: 42¾' ... Beam: 16"
For Engines .65 to .90 Displacement
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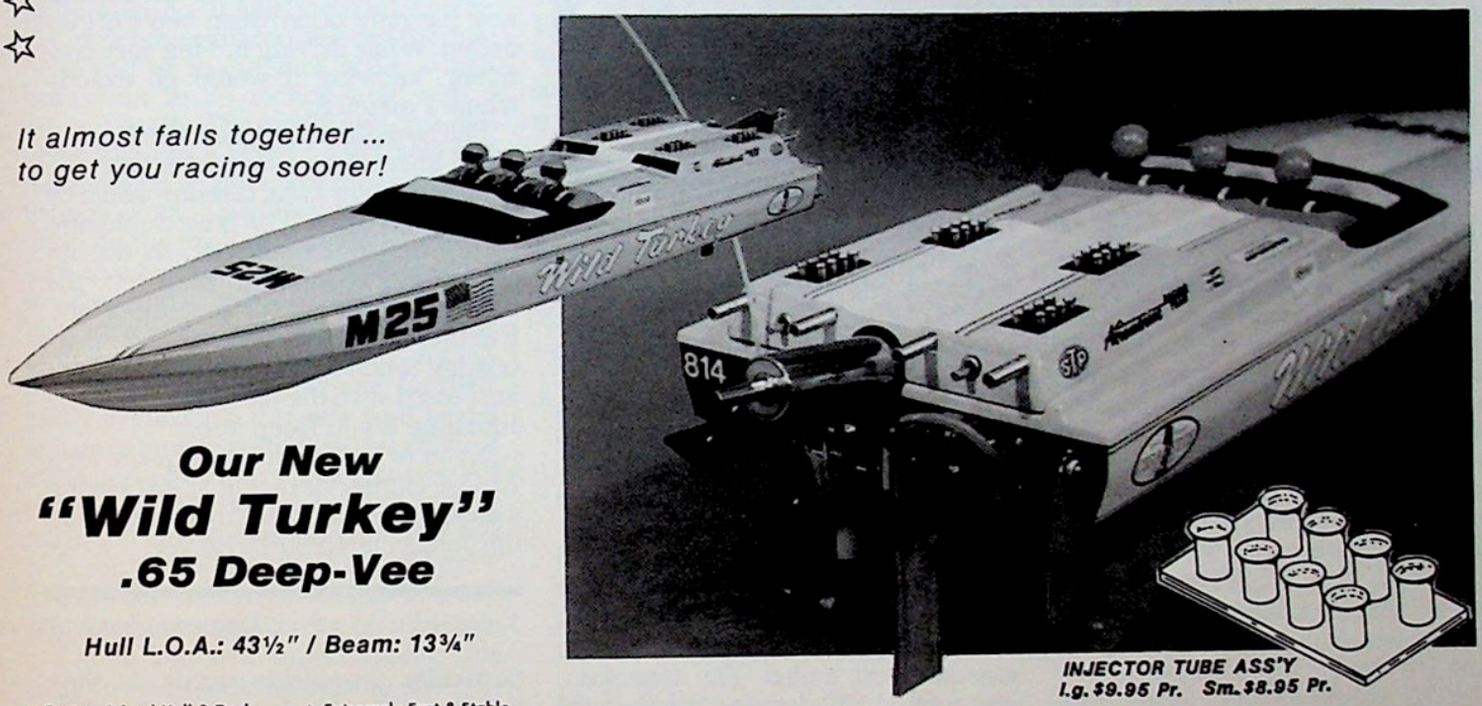
Radio Box: $19.95

HARDWARE KITS AVAILABLE:		
Eng. Size:	Std. Mount	Flex Mount
.65/.90	$102.80	$135.40
.90	$123.25	$143.40
Twin .45/.65	$198.20	N/A

Hardware Kit includes: Motor Mount / Stuffing Box / Strut / Bearings / Rudder / Reducer Bushing / Bolts & Nuts for Mount / Thrust Washer / Drive Dog / Hughey Shaft / Push-Rods / Radio Box Seals / Nose Piece / Solder Links / Tuned Pipe Support Material / Fuel Line / Fuel Tank / Propeller / Starter Belt / Prop Nut.

Decal Sheets Available: ...

It almost falls together ...
to get you racing sooner!



Our New "Wild Turkey" .65 Deep-Vee

Hull L.O.A.: 43½" / Beam: 13¾"

INJECTOR TUBE ASS'Y
Lg. $9.95 Pr. Sm. $8.95 Pr.

- ★ Factory-joined Hull & Deck
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For .65 to .90 Engines (or Twin .45 to .65 Engines)

Engineered for extremely easy access — a beautiful contest-capable design.

The fully molded Fiberglass Hull just about floats right out of the box. We've engineered this one to give you extremely easy access through huge Hatch area, simplifying engine/tank/radio system installations. The engine rails are installed and drilled. We'll space them if you intend to install Twin engines. (Let us know when ordering.) This is a superbly capable competitive Deep-Vee type, perfect for the '87 racing season.

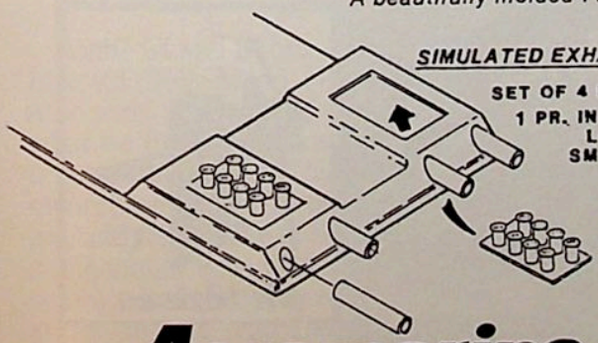
Fiberglass Hull Kit:
$189.95

"Wild Turkey" Decal Set: $35.00

HARDWARE KITS AVAILABLE:		
Eng. Size:	Std. Mount	Flex Mount
.65/.90	$102.80	$135.40
.90	$123.25	$143.40
Twin .45/.65	$198.20	N/A

Radio Box (specify boat) ...$19.95

A beautifully molded Fiberglass Hull and Hatch . . .



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1 PR. INJECTOR STACKS
LG. $9.95
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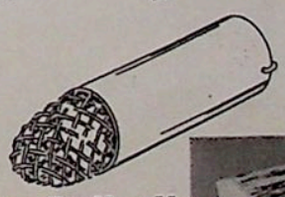

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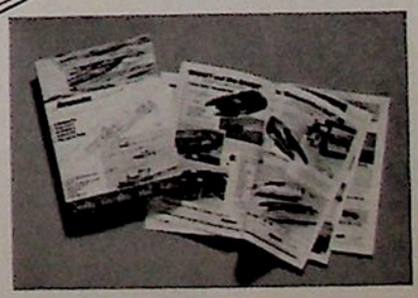

New 1987 "Catalog"

28 pages of Kits, Hulls, Hints, Hardware.
$3.00

Aeromarine Laminates

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largest diameter point of the pipe. A simple bracket to support the end of the tuned pipe to the strut was made.

The radio box was designed so it just fit under the tuned pipe. It is made from 1/16 plywood glued together with Hot Stuff Super-T. A plexiglass cover is held down with 4-40 screws and blind nuts. Robart radio box push rods are used for throttle and rudder pushrods. The rudder pushrod is threaded on one end and a 4-40 steel snap clevis hooked to the Octura tiller arm. A 2-52 pushrod was used for throttle linkage. The throttle pushrod was connected on both ends using Du-Bro EZ Connectors.

An Octura Stream Lined Water Pick-up was flush mounted in the bottom of the hull between the radio box and engine. Glass cloth and Hot Stuff secure it in place. The water outlet was made from 5/32 brass tube and glued in place with Hot Stuff Super-T.

Two 8-ounce Sullivan slant oval fuel tanks were installed, one on each side of the motor mount rails. These are held in place using rubber bands and small cup hooks screwed into 1/4 inch plywood pads held down with glass cloth and Hot Stuff.

The fuel is pumped from the left tank to the right tank through a fuel filter and into the carb. A pressure tap was installed in the tuned pipe and a pressure line runs to the left fuel tank.

To make the fuel inlet on the K&B 7.5 inboard marine carb more accessible and still keep the throttle arm on the left side, the pins that hold the carb together were pulled. The cone piece was rotated 180 degrees and the pins reinstalled. This puts the fuel inlet on the top of the carb.

Before running the boat, all the hardware that could be removed from the hull's interior was removed. Three coats of K&B Super Poxy black were brushed on the inside of the boat. The exterior gel coat is good enough to leave as is. The exterior of the boat may get a paint job sometime in the future.

RUNNING THE JOMARINE 40/60 DEEP VEE

Valentine's day proved to be a beautiful Saturday to run the Jomarine 40/60 Deep Vee for the first time as an inboard. Jerry and I went up to the Seattle club's running site in Kent to see what it would do.

When we first put the boat in the water, it wouldn't get up on a plane. We brought it back and changed from an X-455 to an X-452. The boat was relaunched and took off immediately. The Jomarine 40/60 Deep Vee drove very nicely and was highly controllable. Other than Jerry's 3.5 deep vee, this was the only other deep vee I'd ever driven. While driving it, I felt very confident, knowing it would go exactly where I aimed it.

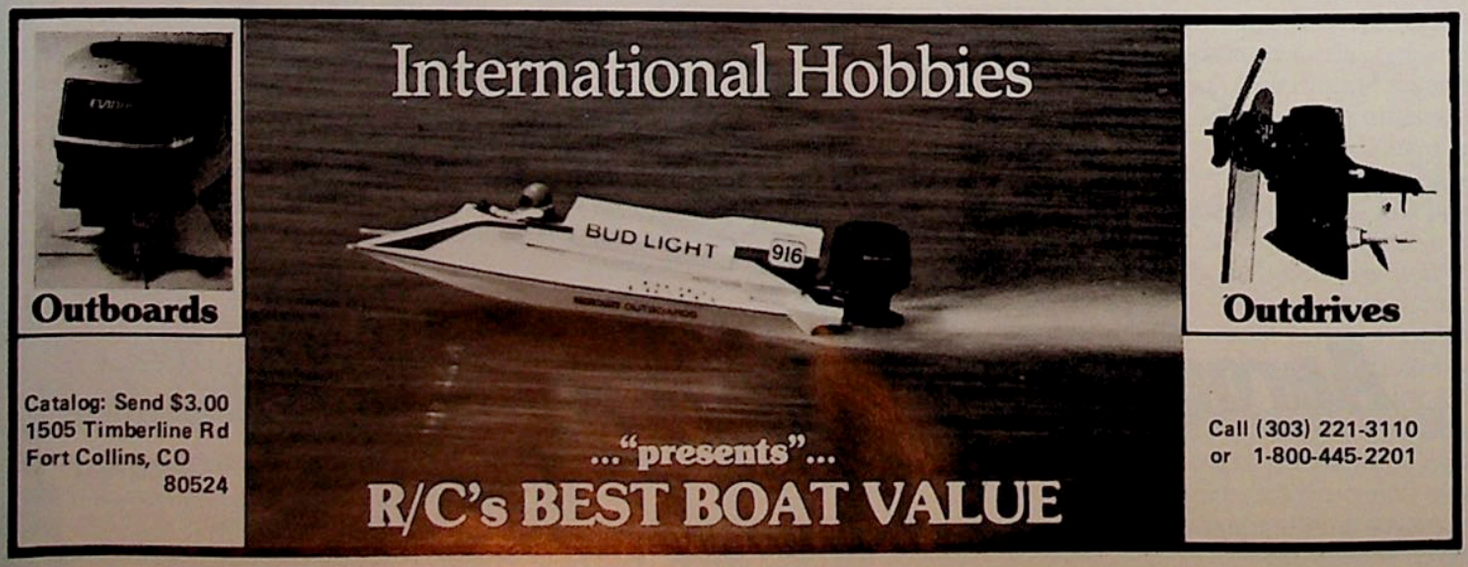
The straightaway speed was impressive. I knew that compared to other 7.5 deep vees in my area, this one would be very competitive. The boat would also corner very well to the left. As the offshore class requires turning left, the ability to make left turns is important. Even Jerry, who has been around model boating much longer than I, was very impressed with the performance of the Jomarine 40/60 Deep Vee.

If you're looking for a deep vee for a 7.5 size engine for racing or just having a good time, I can heartily recommend the Jomarine 40/60 Deep Vee. •

Scuttlebutt . . . *Continued from page 16*

particular propulsion needs as they have specialized in developing complete systems for some of the most popular kits by Lindberg, Sterling, and Staubitz.

Also on display for the entire show was a new boat from Dynamic Models, at P.O. Drawer "C," Port Jefferson Station, NY 11776. If you have been looking for a River Patrol Boat PBR, such



as those used in Viet Nam, their #135 is one-inch to one-foot scale, which works out to a 31-inch model with 10-inch beam and 2-inch draft. The hull, deck and cabin are molded of fiberglass and a waterjet drive is featured. They can also provide scale guns and figures from their extensive line of accessories. The boat kit will be priced in the $150 range, and will be available directly from Dynamic. Please note that Dynamic has recently changed its marketing method and no longer sells through hobby shops.

One new item that was not seen at the W.R.A.M. show will be coming from Polks Aristocraft, at 346 Bergen Ave., Jersey City, NJ 07304. They will have a ready-to-run scale boat model available this spring. It will be a model of the Cruisers Incorporated Vee Sport cruiser. It will be in one-inch scale, which works out to 26 inches long with a 10-inch beam. The model will be molded of vacuum formed plastic and will have extensive injection molded scale fittings. Polks promises that they are avoiding the toy-like appearance which is so common in the ready-to-run- boats we often find in hobby shops. Power will be from a 540 series motor, with a gear reduction for added efficiency. As has been their marketing scheme for their ready-to-run cars, this new boat model will be complete with their two-channel radio and electronic speed control. All that is needed to go boating is a battery pack and charger such as many of you have for your R/C cars. Proposed price is $149.95, which will make this one popular boat down at the pond!

I hope you will enjoy reading this column and I look forward to any correspondence and suggestions which you may have to make the contents responsive to your needs. Write to me care of *U.S. Boat & Ship Modeler*, 898 West 16th St., Newport Beach, California 92663. •

Store . . . . . *Continued from page 66*

Robbe Model Sport, 180 Township Line Rd.,Belle Mead, NJ 08502, has a new scale police boat, at least that's what we figure is meant by "Wasserschutzpolizei!" This 1/25 scale replica incorporates much detail of the original, and with many of the fittings and components being prefabricated, assembly time is greatly reduced, while still maintaining scale-like appearance. Powered by twin Navy Kompakt drive units with a large battery capacity, running times are long, even at high speeds. The hydrodynamically designed hull and double rudder system allows the W-3 to maneuver under the most trying water conditions. Length of the Robbe W-3 is 35-1/2 inches, the beam is 7 inches, and the weight is eight pounds. •

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S.C.R.S. . . . . *Continued from page 24*

With 40 skippers signing up, the club put the regatta in the experienced hands of past class champion, Bob DeBow, who assembled an excellent crew to help him run the event. Fortunately, we now have more radio frequencies to work with, thanks to the A.M.A., and three separate groups of 13 to 14 boats made up one heat, with 12 races for the weekend. A rather long starting line was set to accommodate the large number of boats starting all at once, so there would be a minimum of contact between boats. The course had four buoys to round in different directions, and one had to keep in mind at all times the right-of-way rules, which are basically the same as for the big racing boats.

Saturday's weather had most skippers in rain gear, as a light drizzle and rain wet the area. The wind was the real worry, as it was from the southeast, diagonally across the east-west oriented pond. During the countdown of one minute, boats spaced out along the start line to try and keep the very light winds from being chopped up by competitors, and skippers watched the sails carefully to get the most speed from the wind. The first mark was difficult to maneuver around, as the wind became zephyr-like, as one sailed

S.C.R.S. #4 at San Diego, Dec. 6-7, 1986

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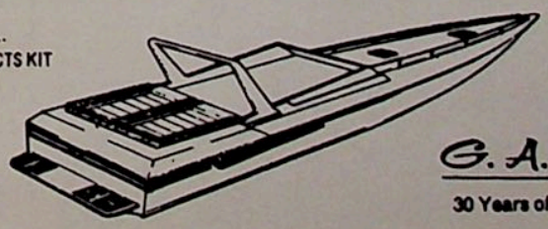

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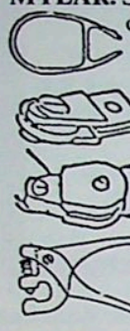

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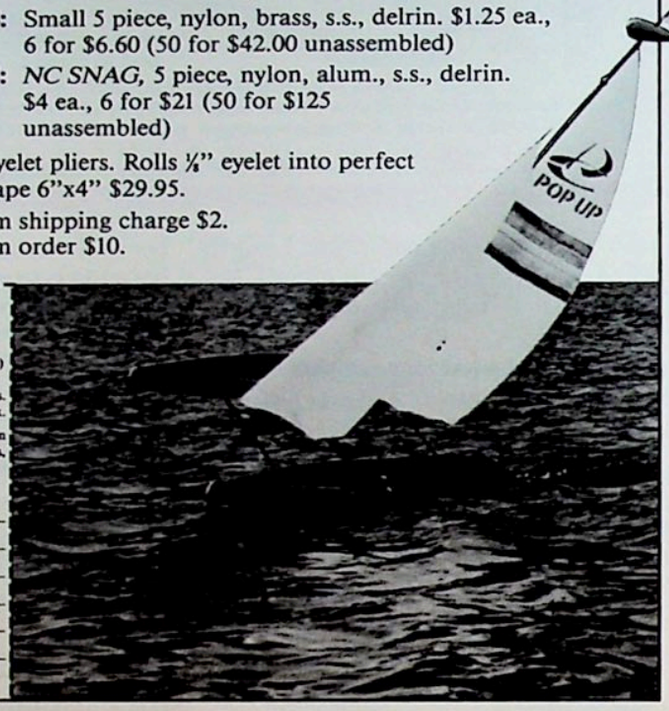

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closer to it. Some bumping between hulls occurred, but the rules allow a penalty turn for misjudgements, and an offender can continue in the race.

The next leg was an easy fetch to the second mark, but here again the faster boats coming up on a stalled boat created right-of-way problems, so the skippers had to stay alert at all times. The third mark brought the fleets across the pond with the wind from astern, followed by a turn down pond for the west end, on a long run with the wind. The winds were very changeable, with boats bunching up close together, but the slow going never created a real danger of doing damage if the boats did bang into one another because of a miscue by their skippers. From this last mark rounding, the fleet moved slowly up wind toward the finish line. But the wind's direction slowly brought the fleet in to the pond's grassy edge, and boats had to maneuver out into the pond before turning again to go for the finish. It was here that many positions changed, as some boats did not sail too well in such slow conditions, or their skippers were not too adept in sailing their boats. It took a lot of concentration and patience to do well on this final leg of the course. Even so, many finishes were very close, to the delight of the spectators who often cheered as the boats crossed the finish line.

By the end of the day's six races, there was a tight group battling for first place. In the ranks were five past and the present National Champion, and many who have been runners-up in recent years. Each of the popular classes holds an Annual Class Championship Regatta, which are held in a different state or area of the country, under the watchful eye of the American Model Yachting Association and its officials. This governing organization publishes newsletter articles covering the whole spectrum of the sport.

By Sunday morning, the weather decided to have one last shower and then brought out the sun to warm the scene. But the winds were mere zephyrs, still from the southeast, to make sailing very, very slow. At times, the fleet was in a 'reflection' mode and for some reason, boats seemed to get in a magnetic field and drift together. Maybe it was the magnetic attraction that the servos set up! Patience here again was the key to sailing, and as normal, a very light breeze would appear, to move the fleet slowly along. One race was shortened to half the course, but that was all, as by noon, the wind did a major shift to come in from the west, gathering up tail-enders and pushing them ahead of boats that were sitting and waiting for the wind to get to them. This was where yours truly went from 4th to 13th and afterwards, saturated his crying towel. Ah, the life of the sailor is always a harsh one. . . .

As the new west wind built to the 4-7 m.p.h. range, different boats started to strut their stuff, and even the lady skippers did well to startle some of the boys. Now it was a speed contest over the zigzag course, and one wind shift

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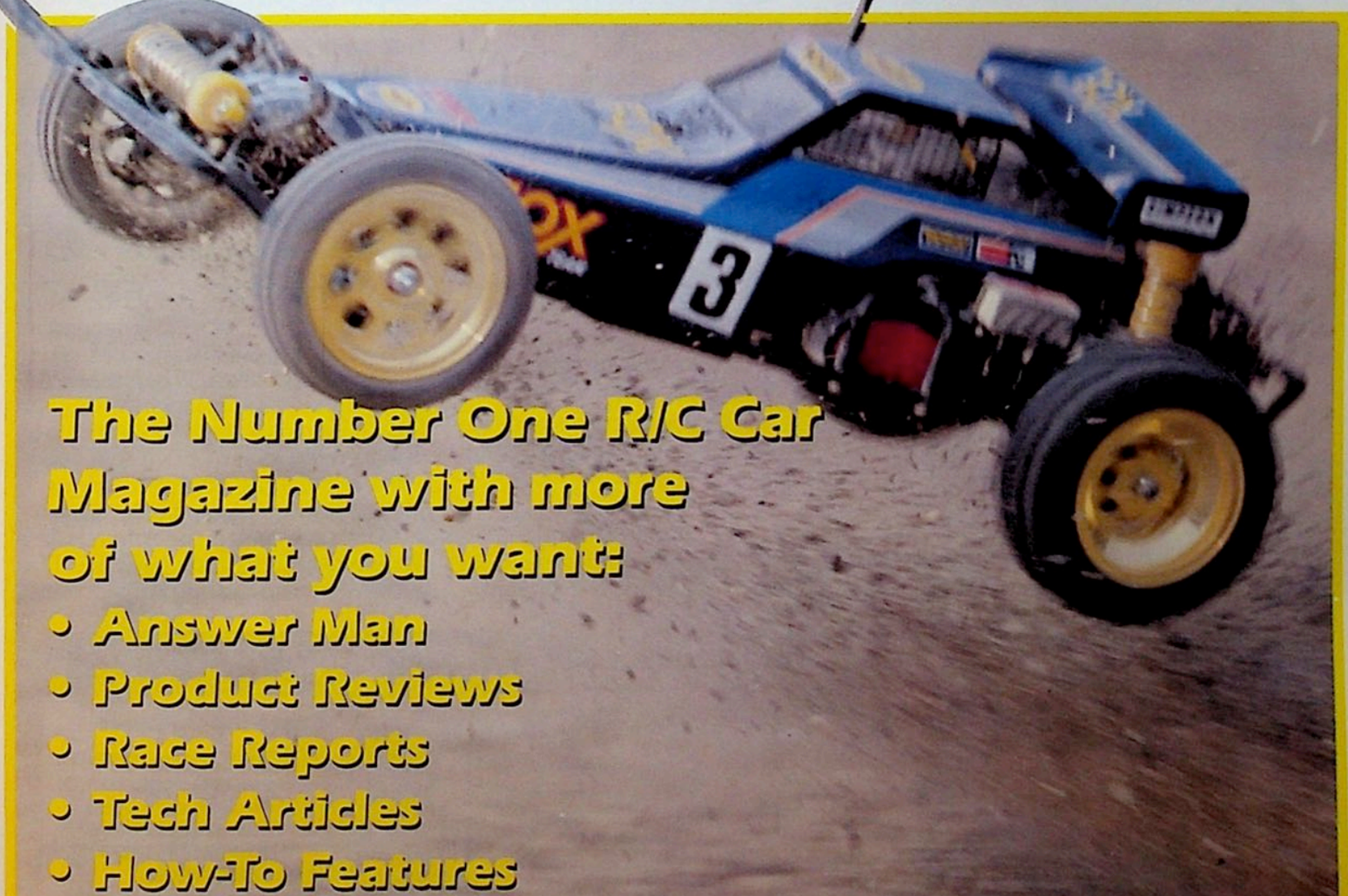

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of 10-15 degrees was often the cause for a loss or a win, so a choice where you sailed on the pond often made the day.

After the 12 races, we were all pleased to find young Lou Porro up in first place. He had been sailing a new lightweight balsa and fiberglass boat with a three-channel Futaba radio. His starts had been excellent for the entire event, he was able to stay out of trouble at the marks, and thus was able to add up the lowest score for the regatta.

Scoring is reverse: First, 3/4 point; second, 2 points; third, 3 points; fourth, 4 points, etc. •

Coyote . . . . . *Continued from page 35*

ice, but the weather was getting warmer. Along came Saturday and we found an open spot in the ice about the size of a football field. We went home and put on an X447 Octura prop and loaded every thing we needed. We expected the X447 prop would be small for the K&B, but we figured we would go easy the first time out. If other brand engines are used, try starting with an X445 Octura prop. This will ensure no overpropping. When arriving at the lake, it didn't take long to fuel the boat and get it running. As anticipated, the boat put on an excellent display of speed and handling. From observing the speed, we knew an X450 prop would put us right in with the best running boats in the district oval races. The X447 really was not enough for our engine.

The handling had to be the best I have ever encountered with any of my previous 20-size riggers. The feeling the boat gave you was that it could be turned when and where you wanted without fear of hooking, dunking, or flipping. This is the quality a great hull should have. A boat that doesn't handle, usually doesn't finish a race.

Between the first few runs and this date, we have only put on an X450 prop. Nothing else needed to be changed.

CONCLUSION

In this competitor's opinion, Don Pinckert has produced a kit to warm the heart of any competitor. The workmanship is excellent and your results should be as pleasant as ours. •

Strictly Sail . . *Continued from page 33*

which celebrate something unique to the area of the club. Chesapeake Appreciation Day Regatta and The Liberty Bell Regatta are two events held for East Coast 12-Meter boats in the Mid-Atlantic, which have been sailed for over 15 continuous years. Winners down through 3rd place are awarded green chevron and year numerals to attach to their sails. GREEN CHEVRON events are a great way to establish a club tradition, or to mark a local event of significance. Many of them are scheduled in the late spring or early fall and are able to draw substantial entries from surrounding fleets as the event is not in competition with championships of various sorts that are bunched in the summer months.

DIVISIONAL CHAMPIONSHIPS are scheduled by the respective Class Secretaries with an eye to even distribution around the country from year to year. Red chevrons and year numerals are awarded for these events, and they often draw top competitors who are working their way up the competition ladder. Usually three or four Divisionals are scheduled for a class depending on its size and its distribution. Often the Divisionals are held before the Annual Class Championship Regatta (ACCR) and used as tune-up events by the strongest sailors. Such scheduling is not mandatory, however.

The top of the heap at the national level for each class is the Annual Class Championship Regatta (ACCR). This too is scheduled by the Class Secretary

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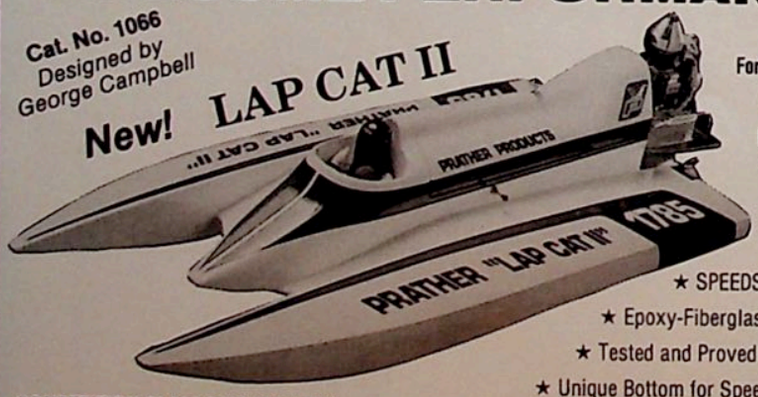

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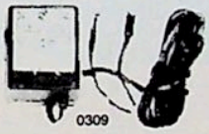

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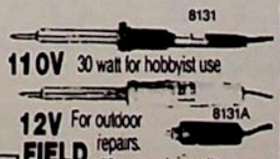

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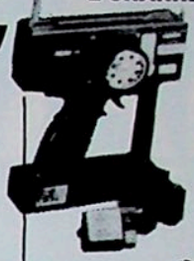

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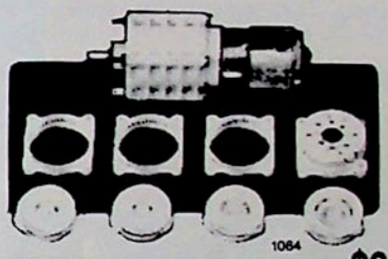

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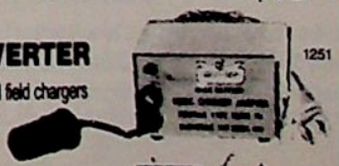

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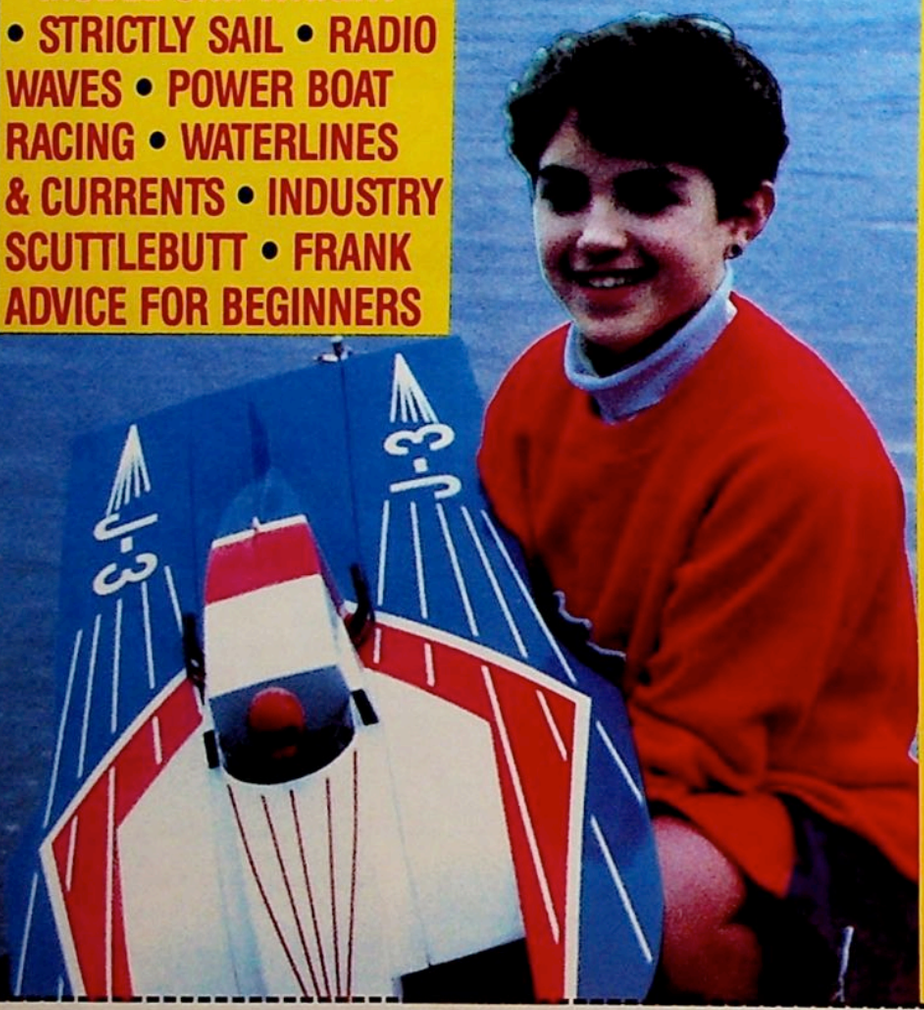
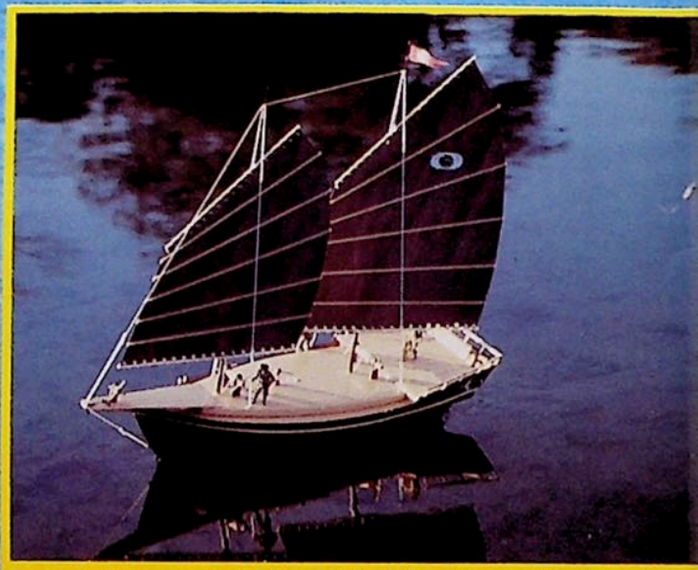
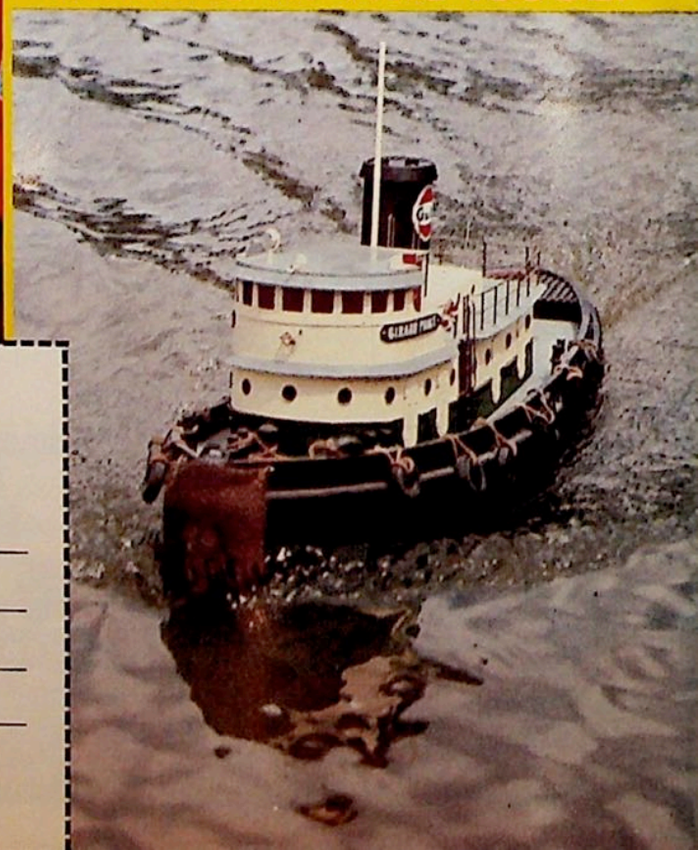




CONSTRUCTION ARTICLES FOR ALL OF THESE MODELS IN THIS ISSUE!



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and it is not unusual for clubs wishing to hold an ACCR for a popular class to bid two or three years in advance for that assignment. Contrary to popular belief, you don't have to be Dennis Conner to sail in an ACCR. To my knowledge, none of the classes are requiring eliminations to gain entrance to the ACCR. Some events do set a limit of two or three boats per frequency, and will give priority to skippers from out of town. Local fleet members provide regatta management, race committee and other support. Members of the local club should make sailing in the event a high priority. You can learn more in two days, sailing with the top skippers, than in a year of local fleet action with only a sprinkling of seasoned talent. You needn't fear sailing with the best, each of them knows the rules and will do an excellent job of pointing out who has the right of way (in a rather loud voice). ACCR's award GOLD CHEVRONS and YEAR NUMERALS. The events are usually scheduled in late summer and almost always are two day events, so have plenty of chargers and batteries when you pack up to make the trip.

At somewhat irregular intervals, World Championships are held within the U.S. Held under IMYRU Sanction, they are the ultimate in model yachting competition. Again, enter one if you can. Just the chance to look over all the different boats in the fleet is worth the admission price. In the formula classes like the A-Class, 10-Rater, and Marblehead (50/800), the different designs, fittings and rigging arrangements are extremely interesting.

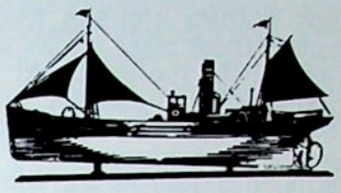
Getting started in model yachting is rather easy. I would recommend two immediate actions which will maximize the flow of information for you. First, write a check to the AMERICAN MODEL YACHTING ASSOCIATION for the $20 annual dues. You will then start receiving the Quarterly Newsletter. (AMYA SECRETARY, Pat Hein, 1884 Campus Court, Rochester, MI 48065). Second, take out a subscription to *U.S. BOAT & SHIP MODELER*. The "Strictly Sail" column will appear every time and I'll do my best to gather up-to-date information for each issue. Having done these two things, you will be ready to consider picking out a class of yacht to build or buy.

A sensible approach would be to build or buy a yacht of the same class that is being sailed in your area. But, you ask, where are they sailing near me! Fair question. Table 1 provides a list of AMYA Clubs, sorted by state, and giving the name of the club, the club contact person and his phone number. This information was taken from AMYA QNL #66 (Winter 1987) so is recent. Any changes are more recent, any errors are inadvertent. Call the contact person and find out about the club's activities. They are all most helpful and are interested in introducing you to the sport.

While we are talking about clubs, I would like to run some information in this column about the different clubs located around the country. If your club contact person will send me a description of your club, the classes you sail, what your sailing waters are like and what events you host, I'll use them in the order received. It would be a good way to find out what is happening from club to club.

If you are not close to a club, your choice of a boat is less restricted. Next issue I will present a rundown on all the AMYA Classes, develop some selection criteria to guide your choice, and provide the name and address of the Class Secretary from whom you may get further information. Each Class Secretary has been contacted and I'm counting on them to give us some insight into the strong points of each class of boat as well as some photographs of the boats underway, and with people for size comparison.

In future issues, we will take a peek inside a generic R/C model yacht and discuss the different systems that



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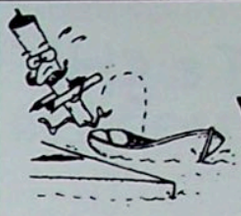

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make it work. It will be a general introduction to model yachts of all classes. I'll try to assemble a list of suppliers for the different parts of the boat so that you can write for catalogs. Many of our suppliers are small firms with limited advertising budgets, so listing them here will help everyone.

After that, we will look into the science of sailing itself. Talk about the different points of sail, learn some vocabulary which is peculiar to sailing (*not* ALL *of the vocabulary, please, Rod! wcn*), and sail around the race course from our easy chairs.

We might go into the step-by-step construction of a one-design boat, such as an EC/12, which has everything from bare hulls to complete kits available, if there is interest.

Subsequent installments can cover any topic, many of which might better come from you. I'm happier writing about things that you have asked for information on than just shooting in the dark and hoping I am close to the target. So please send my your questions to: Rod Carr, 3011-177th Ave., NE, Redmond, WA 98052, or c/o U.S. Boat & Ship Modeler, 898 West 16th St., Newport Beach, CA 92663. And remember to get your annual dues off to Pat Hein for AMYA. •

Waterlines . . . *Continued from page 29*

line, and Buttock 4 is four feet out. Remember, these plans are for a full-scale vessel. In the starboard view, these buttocks are no longer straight lines, but are curved! Let's give your imagination a real workout!

Your name is Gulliver, and you have achieved rapport with the ridiculous little people of Lilliput. You have constructed a bandsaw to your scale but with a magically thin blade. You tell the carpenters of Lilliput to locate a bunch of one foot by one foot by 40 feet long timbers (by their scale). To you, Gulliver, this is about one inch by one inch by 40 inches. You instruct the Lilliputians to glue them together so that you have five planks 40 feet long and 10 feet wide. All dimensions are to the Lilliputian scale, which we shall use from now on. When they deliver them (with great difficulty), you pick them up, one by one, and with a square, draw a line across every plank, starting three feet from the plank end. This information you found just to the left of the section view. These are station positions. Lay out the port view on the first piece, omitting the rudder. The sheerline, incidentally, is the top of the hull just under the rail. Saw the outline out. Still from the port view, lay out and saw buttocks 1, 2, 3, and 4. At this point you will have to beat up the loudest of the Lilliputian carpenters, for you will be throwing away most of their labor, and they will be perturbed.

Now, go to the section view. The dotted line is called the rabbet (not spelled like the cuddly little animal), which will be discussed in a later article. Measure the rabbet at each station, and lay that dimension out on the bottom. To keep the Little Fellows busy, let them carve away the "steps" on this half-hull, dropping straight down from the rabbet. Again, from the section plan, set off the bottom half-widths and carve from the rabbet to that line. A little sanding and you have a credible half-model of the hull, less the rudder! But, we are not through. You, as Gulliver, must ask the King to send all the carpenters into the forest to chop down enough trees to provide the King with toothpicks for all the royal banquets the rest of his reign, for what you are preparing to do will make them very, very angry.

Locate the LWL (from the starboard view) on each end of the model. With your square, make the flat back vertical with the table as you adjust the model so that each end of the LWL is the same distance off the table. Scribe the LWL on the model surface. Lay the model flat on its back side and very carefully saw along the scribed LWL. If you lay either of the pieces over the bottom *port* view at the figure bottom, you will find a pretty good match (it should be perfect, but you know how things are) with the curved line marked LWL. Sawing cuts on the top half and bottom half one foot apart (Lilliput scale, of course), you will find they match. If you like, glue these waterline sections back together with a piece of black paper between. You can see the waterlines and the buttocks (the buttocks will be more legible if the carpenters used black glue). Gulliver didn't glue them back together, and the carpenters were hopping mad on their return from the forest when they saw several Dempsey Dumpsters full of the 12 by 12-inch pieces they had worked so hard to make for Gulliver. The powerful Lilliput Carpenters' Union brought Gulliver into disfavor with the Court, which is the real reason for his sudden leaving the country. When he made shore again, it was in the country of those *big* mothers, which is another story.

This has been a very quick discussion of the drawings which you must obtain if you are to scratch-build a boat model. It has also been a rudimentary explanation of lines. The list of topics which will be presented in Waterlines & Currents we hope will pique your interest and make you a regular reader of WL&C. (*He's really quite sane, you know. wcn*)

May you have fair winds, and a clear star to steer by. •

Cap'n's Log . . . *Continued from page 6*

Chesapeake Bay, and Annapolis, Maryland.

Before real estate went crazy in the last 10 to 12 years, we were fortunate in finding a waterfront home in the harbor of Newport Beach, and tied up to the dock is a 32-foot Islander sloop, a 19-foot Sea Ray deep-vee with a Ford V-8 powered O.M.C. outdrive, and a canoe molded of cross-linked polyethylene as used in rocket nose cones!

It's safe to say that boating is in our blood!

U.S. BOAT & SHIP MODELER has gathered a superior writing crew of model boat and ship experts who will provide the kind of material that becomes permanent reference.

Beginning with Jerry Dunlap, we have a longtime contributing editor, who, through national race wins and record settings, has established himself as a leader in model power boat racing. Fortunately for the beginner, Jerry has recruited Dave Frank, who, though fast becoming an expert, was so recently a beginner that he is still able to communicate with, and understand the

problems that a newcomer has to endure along the learning curve.

Milt Roth, proprietor of The Dromedary Ship Modeler's Center, will conduct "The Model Shipwright," concentrating on all elements of wooden ship model construction. Both static and operational ship model builders will benefit from his knowledge.

Fred Lehmberg, who also writes for one of our companion magazines, *MODEL BUILDER*, is a theoretician, and in his column, "Waterlines & Currents," he will attempt to make us all aware of *why* we should do certain things when designing or modifying our boat models, choosing power systems, selecting props, etc. In this issue, both Fred and Milt, as part of their introductions, have somewhat overlapped each other in their descriptions of the basic lines that determine the three-dimensional shape of a hull, but we see no problem with that. Any model or full-size boater worth his sea salt should understand the basics of hull shape if he intends to get serious about the matter, and a little repetition here and there can do no harm.

For quite a few years, *MODEL BUILDER* featured articles about model sailing yachts by an expert on the subject, and a manufacturer of model yacht sails, Rod Carr. It was a sad day when his gainful employment work load increased to the point that he had to discontinue both his sailmaking business and his column, "Strictly Sail." Fortunately for all of us, and very nicely coincident with the establishment of *USBSM,* Rod is back into the hobby with every square inch of fabric grabbing the wind. It's still "Strictly Sail" and it's still strictly the best!

For some modelers. . .whether it be aircraft, car, or boat. . .radio control becomes a necessary evil. The modern R/C system is as different as night and day from the early, marginally reliable systems that many of us fiddled with in the '50s and early '60s. To relative newcomers, the problem is not reliability, but trying to understand why certain basic rules must be followed and figuring out what all the fancy "bells and whistles" can or cannot do for us. So. . . .

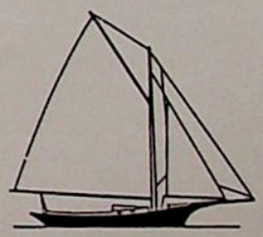
Eloy Marez is sort of the "resident radio tech" for RCMB'S existing publications, *Model Builder* and *Radio Control Model Cars*. Because he is able to communicate in everyday lingo with the average non-electronic modeler, and make the hidden secrets of radio control operation at least a little bit understandable, his services as "interpreter" are invaluable. We know you'll find his "Radio Waves" a very useful source of reference.

'Industry Scuttlebutt" will be our news of what's new in the model boat and ship trade. Not to be confused with our new products column, Ralph Warner plans to discuss industry trends, and where possible, call our attention to new items that are in the works by various hobby related manufacturers. He's had a lot of time in the hobby, is proprietor of Radio Controlled Models (RAM), and also edits a regular column on model boating in the trade magazine *Modeler Retailer.*

As we said up front, the aim of *USBSM* is to provide useful and detailed reference material on all facets of model boats and ships. The choice of title goes along with our thought that "Boats" implies coverage of the very active racing boat fraternities, as well as sport modeling of anything that comes under the full-size category of smaller water vessels, whereas "Ships" connotates larger seagoing vessels, both military and commercial, the stately multi-masted sailing ships of all eras, the nostalgic paddle-wheel river ships, the ocean crossing freighters and passenger liners, etc. And "Ships" also seems to be most likely associated with the more highly detailed type of model, which in the past was usually intended for static display only, but in recent years, with the availability of reliable running gear and radio control systems, is both static and operational.

Somewhere within the basic categories of "boat" and "ship", we find the sailing yachts which are raced in various class categories under direction of the American Model Yachting Association (that's Rod Carr's bailiwick), and we also find the scale-like warships that engage in strategic battle skirmishes and are able to sink each other with live guns firing hull-puncturing ammunition. No doubt there are other in between categories of model boat and ship activity in which we will become involved in reporting to our readers.

U.S. BOAT & SHIP MODELER will remain as unlimited in coverage as the hobby itself, and we welcome the comments, suggestions, and constructive criticisms of our readers and advertisers to make your and our efforts in publishing this magazine the most beneficial to all. •



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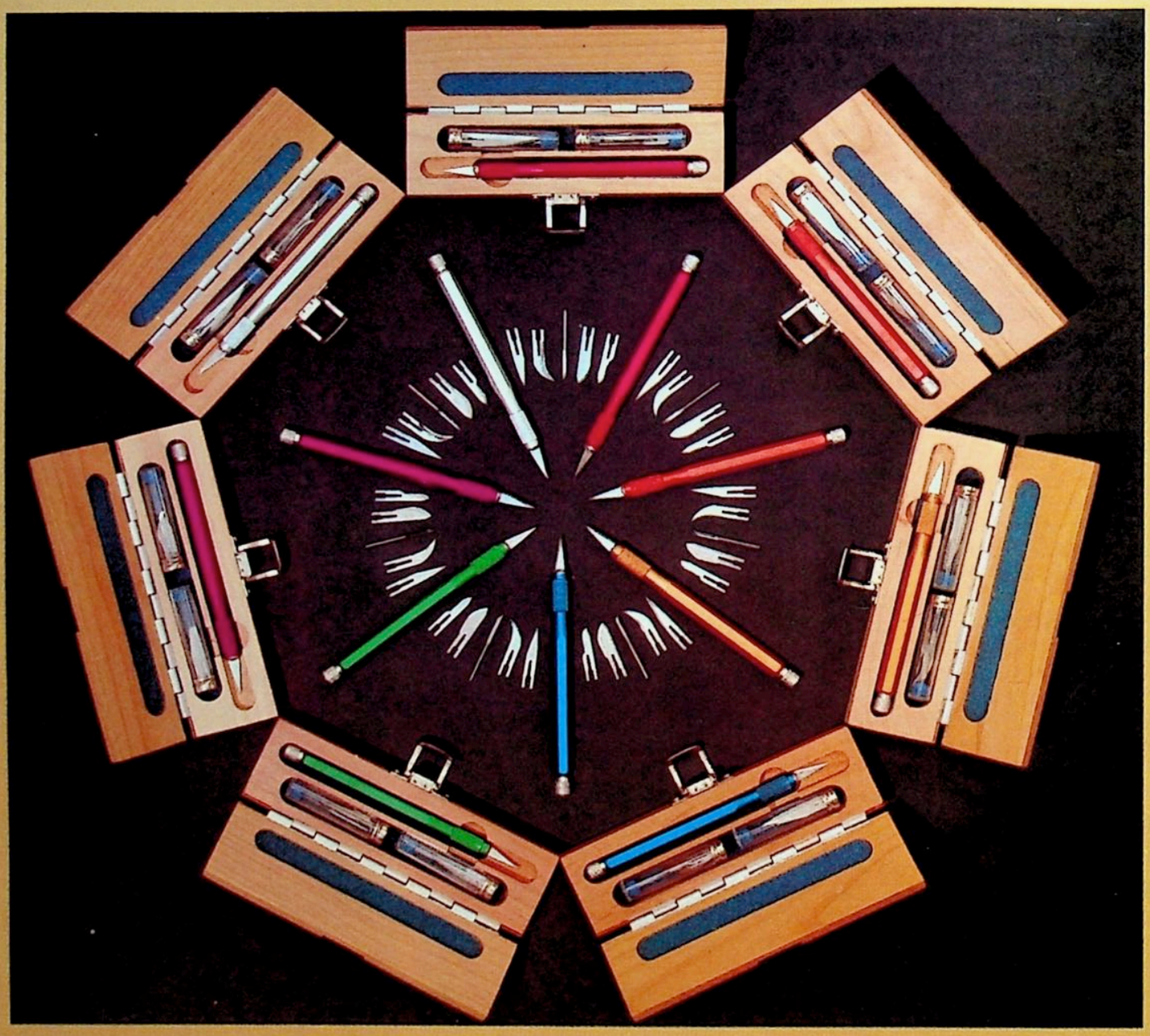

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